**CITY OF HOUSTON**
**DEPARTMENT OF PUBLIC WORKS AND ENGINEERING**
**ENGINEERING AND CONSTRUCTION DIVISION**

# PROJECT MANUAL
## Safe Sidewalk Program (Package III)
## WBS No. N-320610-B125-4

**VOLUME 1 of 1**

Divisions 00 through 16

October 2014

NEDU Engineering Services
6776 Southwest Fwy., Suite 320
Houston, Texas 77074
(713) 268-1666

**City of Houston**
**Department of Public Works and Engineering**
**Engineering and Construction Division**

# PROJECT MANUAL
## Safe Sidewalk Program
## Package III

**PROJECT No.:** ***WBS NO. N-320610-B125-4***

***VOLUME NO. 1 OF 1***

Divisions 00 through 16

October 2014.

STATE OF TEXAS
NKEMDI I. OHALETE
79423
LICENSED
PROFESSIONAL ENGINEER
10/7/14

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Document 00010

# TABLE OF CONTENTS

NOTE: Bold capitalized Specification Sections are included in the City of Houston Department of Public Works and Engineering Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic located here: **http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction/92-specifications/208-division-02-16-standard-specifications.html**; and are incorporated in Project Manuals by reference as if copied verbatim. Documents listed "for filing" are to be provided by Bidder and are not included in this Project Manual unless indicated for example only. The Document numbers and titles hold places for actual documents to be submitted by Contractor during Bid, post-bid, or construction phase of the Project. Specification Sections marked with an asterisk (*) are amended by a supplemental specification, printed on blue paper and placed in front of the Specification it amends. Documents in the 200, 300 and 400 series of Division 00, except for Document 00410B – Bid Form, Part B, are not part of the Contract.


| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| | **INTRODUCTORY INFORMATION** | |
| 00010 | Table of Contents | 05-16-2014 |
| 00015 | List of Drawings | 02-01-2004 |
| 00041 | List of Pre-qualified Asbestos & Lead Abatement Contractors | 03-21-2012 |
| 00042 | List of Designated Subcontractors and Suppliers | 02-01-2004 |
| | **BIDDING REQUIREMENTS** | |
| | INSTRUCTIONS TO BIDDERS | |
| 00200 | Instructions to Bidders | 03-01-2014 |
| 00210 | Supplementary Instructions to Bidders | 07-01-2013 |
| 00220 | Request for Bid Information | 06-11-2004 |
| | BID FORMS AND SUPPLEMENTS | |
| 00410 | Bid Form, Parts A & B | 08-01-2013 |
| 00430 | Bidder's Bond (For filing; Example Form) | 02-01-2004 |
| 00450 | Bidder's Statement of MWBE/PDBE/DBE/SBE Status | 07-01-2013 |
| 00452 | Contractor Submission List - Fair Campaign Ordinance | 04-30-2004 |
| 00453 | Bidder's Statement of Residency | 02-01-2004 |
| 00454 | Affidavit of Non-interest | 02-01-2004 |
| 00455 | Affidavit of Ownership or Control | 09-04-2007 |
| 00457 | Conflict of Interest Questionnaire | 02-28-2006 |
| 00459 | Contractor's Statement Regarding Previous Contracts Subject to EEO | 02-01-2004 |
| 00460 | (POP-1) Pay or Play Acknowledgement Form | 07-03-2012 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| 00470 | Bidder's MWSBE Participation Plan | 08-01-2013 |
| 00471 | Pre-bid Good Faith Efforts | 07-01-2013 |
| 00472 | Bidder's Goal Deviation Request | 07-01-2013 |
| POST-BID PROCEDURES | | |
| 00495 | Post-bid Procedures | 08-01-2013 |

**CONTRACTING REQUIREMENTS**

| | | |
|---|---|---|
| AGREEMENT | | |
| 00500 | Form of Business | 02-01-2004 |
| 00501 | Resolution of Contractor | 02-01-2010 |
| 00520 | Agreement | 07-01-2013 |
| 00570 | Contractor's Revised MWSBE Participation Plan | 08-01-2013 |
| 00571 | Record of Post-Award Good Faith Efforts | 08-01-2013 |
| 00572 | Contractor's Request for Plan Deviation | 08-01-2013 |
| BONDS AND CERTIFICATES | | |
| 00600 | List of Proposed Subcontractors and Suppliers | 07-01-2013 |
| 00601 | Drug Policy Compliance Agreement | 02-01-2004 |
| 00602 | Contractor's Drug Free Workplace Policy (For filing) | |
| 00604 | History of OSHA Actions and List of On-the-job Injuries | 02-01-2004 |
| 00605 | List of Safety Impact Positions | 02-01-2004 |
| 00606 | Contractor's Certification of No Safety Impact Positions | 02-01-2004 |
| 00607 | Certification Regarding Debarment, Suspension, and Other Responsibility Matters | 02-01-2004 |
| 00610 | Performance Bond | 05-17-2005 |
| 00611 | Statutory Payment Bond | 05-17-2005 |
| 00612 | One-year Maintenance Bond | 05-17-2005 |
| 00613 | One-year Surface Correction Bond | 05-17-2005 |
| 00620 | Affidavit of Insurance (with attached Certificates of Insurance) | 02-01-2004 |
| 00622 | Name and Qualifications of Proposed Superintendent (For filing) | |
| 00623 | Contractor's Act of Assurance (SRF Form ED-103) | 02-01-2004 |
| 00624 | Affidavit of Compliance with Affirmative Action Program | 02-01-2004 |
| 00630 | (POP-2) Certification of Compliance with Pay or Play Program | 07-03-2012 |
| 00631 | (POP-3) City of Houston Pay or Play Program – List of Subcontractors | 07-03-2012 |
| 00633 | Equal Employment Opportunity–Certification By Material Suppliers | 02-01-2010 |
| 00642 | Monthly Subcontractor Payment Reporting Form | 02-01-2010 |
| 00646 | Payment Notification Explanation of Withholding | 02-01-2010 |
| GENERAL CONDITIONS | | |
| 00700 | General Conditions | 08-01-2013 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| SUPPLEMENTARY CONDITIONS | | |
| 00800 | Supplementary Conditions | 08-01-2013 |
| 00805 | Equal Employment Opportunity Program Requirements | 05-01-2012 |
| 00808 | Requirements for the City of Houston Program for Minority, Women, and Small Business Enterprises (MWSBE), and Persons with Disabilities Business Enterprises (PDBE) Program | 08-01-2013 |
| 00820 | Wage Scale for Engineering Construction | 02-01-2014 |
| 00840 | Pay or Play Program Requirements | 07-03-2012 |
| ADDENDA AND MODIFICATIONS | | |
| 00910 | Addendum | 02-01-2004 |
| 00911 | Notice of Addendum | 02-01-2004 |
| 00931 | Request for Information | 02-01-2004 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| | **SPECIFICATIONS** | |
| **DIVISION 1 - GENERAL REQUIREMENTS** | | |
| 01110 | Summary of Work | 06-27-2005 |
| 01145 | Use of Premises | 01-01-2011 |
| 01255 | Change Order Procedures | 08-01-2003 |
| 01270 | Measurement and Payment | 08-01-2003 |
| 01292 | Schedule of Values | 08-01-2003 |
| 01312 | Coordination and Meetings | 08-01-2003 |
| 01321 | Construction Photographs | 08-01-2003 |
| 01325 | Construction Schedule | 08-01-2003 |
| 01326 | Construction Schedule (Bar Chart) | 08-01-2003 |
| 01330 | Submittal Procedures | 08-01-2003 |
| 01340 | Shop Drawings, Product Data, and Samples | 08-01-2003 |
| 01351 | Environmental Safety and Worker Protection | 01-01-2011 |
| 01410 | TPDES Requirements (with Attachments) | 02-01-2011 |
| 01422 | Reference Standards | 08-01-2003 |
| 01450 | Contractor's Quality Control | 08-01-2003 |
| 01452 | Inspection Services | 08-01-2003 |
| 01454 | Testing Laboratory Services | 08-01-2003 |
| 01502 | Mobilization | 08-01-2008 |
| 01504 | Temporary Facilities and Controls | 01-01-2011 |
| 01506 | Diversion Pumping | 08-01-2003 |
| 01520 | Temporary Field Office | 02-08-2012 |
| 01554 | Traffic Control and Street Signs | 07-01-2012 |
| 01555 | Traffic Control and Regulation | 01-01-2011 |
| 01562 | Tree and Plant Protection | 01-01-2011 |
| 01570 | Storm Water Pollution Control | 01-26-2012 |
| 01575 | Stabilized Construction Access | 02-01-2011 |
| 01576 | Waste Material Disposal | 08-01-2003 |
| 01578 | Control of Ground and Surface Water | 01-01-2011 |
| 01580 | Project Identification Signs | 08-01-2003 |
| 01581 | Excavation in Public Way Permit Signs | 08-01-2003 |
| 01610 | Basic Product Requirements | 01-01-2011 |
| 01630 | Product Substitution Procedures | 08-01-2003 |
| 01725 | Field Surveying | 01-01-2011 |
| 01731 | Cutting and Patching | 01-01-2011 |
| 01732 | Procedure for Water Valve Assistance (with Attachments) | 08-01-2003 |
| 01740 | Site Restoration | 08-01-2003 |
| 01755 | Starting Systems | 08-01-2003 |
| 01770 | Closeout Procedures | 08-01-2003 |
| 01782 | Operations and Maintenance Data | 08-01-2003 |
| 01785 | Project Record Documents | 08-01-2003 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| **DIVISION 2 - SITE WORK** | | |
| 02081 | CAST-IN-PLACE CONCRETE MANHOLES | 01-01-2011 |
| 02082 | PRECAST CONCRETE MANHOLES | 01-01-2011 |
| 02083 | FIBERGLASS MANHOLES | 01-01-2011 |
| 02084 | FRAMES, GRATES, RINGS, AND COVERS | 08-01-2008 |
| 02085 | VALVE BOXES, METER BOXES, AND METER VAULTS | 01-01-2011 |
| 02086 | ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE | 01-01-2011 |
| 02087 | BRICK MANHOLE FOR STORM SEWERS | 10-01-2002 |
| 02136 | WASTE MATERIAL HANDLING, TESTING AND DISPOSAL | 01-01-2011 |
| 02201 | SITE PREPARATION, GRADING, RESTORATION AND CLEAN UP FOR WATER STORAGE TANKS | 01-01-2011 |
| 02221 | REMOVING EXISTING PAVEMENTS AND STRUCTURES | 07-01-2009 |
| 02222 | ABANDONMENT OF SEWERS | 01-01-2011 |
| 02233 | CLEARING AND GRUBBING | 01-01-2011 |
| 02260 | TRENCH SAFETY SYSTEM | 02-01-2011 |
| 02315 | ROADWAY EXCAVATION | 07-01-2009 |
| 02316 | EXCAVATION AND BACKFILL FOR STRUCTURES | 01-01-2011 |
| 02317 | EXCAVATION AND BACKFILL FOR UTILITIES | 01-01-2011 |
| 02318 | EXTRA UNIT PRICE WORK FOR EXCAVATION AND BACKFILL | 01-01-2011 |
| 02319 | BORROW | 01-01-2011 |
| 02320 | UTILITY BACKFILL MATERIALS | 01-01-2011 |
| 02321 | CEMENT STABILIZED SAND | 01-01-2011 |
| 02322 | FLOWABLE FILL | 08-01-2008 |
| 02330 | EMBANKMENT | 10-01-2002 |
| 02336 | LIME-STABILIZED SUBGRADE | 10-01-2002 |
| 02337 | LIME/FLY-ASH STABILIZED SUBGRADE | 10-01-2002 |
| 02338 | PORTLAND CEMENT STABILIZED SUBGRADE | 10-01-2002 |
| 02340 | COMPACTED SANDFILL UNDER TANK FLOOR PLATE | 01-01-2011 |
| 02400 | TUNNEL SHAFTS | 01-01-2011 |
| 02401 | COMMON TUNNEL SHAFTS | 01-01-2011 |
| 02425 | TUNNEL EXCAVATION AND PRIMARY LINER | 10-01-2002 |
| 02426 | SEWER LINE IN TUNNELS | 10-01-2002 |
| 02427 | PLASTIC LINER FOR LARGE-DIAMETER CONCRETE SEWERS AND STRUCTURES | 10-01-2002 |
| 02431 | TUNNEL GROUT | 10-01-2002 |
| 02441 | MICROTUNNELING AND PIPE-JACKED TUNNELS | 01-01-2011 |
| 02447 | AUGERING PIPE AND CONDUIT | 10-01-2002 |
| 02448 | PIPE AND CASING AUGERING FOR SEWERS | 10-01-2002 |
| 02465 | DRILLED SHAFT FOUNDATIONS | 10-01-2002 |
| 02476 | CAISSON FOR LIFT STATION | 01-01-2011 |
| 02501 | DUCTILE IRON PIPE AND FITTINGS | 02-01-2011 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| 02502 | STEEL PIPE AND FITTINGS | 01-01-2011 |
| 02503 | COPPER TUBING | 10-01-2002 |
| 02504 | CENTRIFUGALLY CAST FIBERGLASS PIPE | 02-01-2011 |
| 02505 | HIGH DENSITY POLYETHYLENE (HDPE) SOLID AND PROFILE WALL PIPE | 02-01-2011 |
| 02506 | POLYVINYL CHLORIDE PIPE | 01-01-2011 |
| 02507 | PRESTRESSED CONCRETE CYLINDER PIPE | 01-01-2011 |
| 02508 | EXTRA STRENGTH CLAY PIPE | 02-01-2011 |
| 02509 | FIBERGLASS REINFORCED PIPE FOR PRESSURE MAINS | 01-01-2011 |
| 02511 | WATER LINES | 01-01-2011 |
| 02512 | WATER TAP AND SERVICE LINE INSTALLATION | 04-27-2012 |
| 02513 | WET CONNECTIONS | 10-01-2002 |
| 02514 | DISINFECTION OF WATER LINES | 01-01-2011 |
| 02515 | HYDROSTATIC TESTING OF PIPELINES | 01-01-2011 |
| 02516 | CUT, PLUG, AND ABANDONMENT OF WATER LINES | 01-01-2011 |
| 02517 | WATER LINE IN TUNNELS | 10-01-2002 |
| 02518 | STEEL PIPE AND FITTINGS FOR LARGE-DIAMETER WATER LINES | 01-01-2011 |
| 02520 | FIRE HYDRANTS | 05-05-2011 |
| 02521 | GATE VALVES | 01-01-2011 |
| 02522 | BUTTERFLY VALVES | 01-01-2011 |
| 02523 | PRESSURE REDUCING VALVES | 10-01-2002 |
| 02524 | AIR RELEASE AND VACUUM RELIEF VALVES | 01-01-2011 |
| 02525 | TAPPING SLEEVES AND VALVES | 01-01-2011 |
| 02526 | WATER METERS | 01-01-2011 |
| 02527 | POLYURETHANE COATINGS ON STEEL OR DUCTILE IRON PIPE | 10-01-2002 |
| 02528 | POLYETHYLENE WRAP | 01-01-2011 |
| 02531 | GRAVITY SANITARY SEWERS | 01-01-2011 |
| 02532 | SANITARY SEWER FORCE MAINS | 01-01-2011 |
| 02533 | ACCEPTANCE TESTING FOR SANITARY SEWERS | 01-01-2011 |
| 02534 | SANITARY SEWER SERVICE STUBS OR RECONNECTIONS | 01-01-2011 |
| 02550 | SLIPLINING SANITARY SEWERS | 01-01-2011 |
| 02553 | POINT REPAIR AND OBSTRUCTION REMOVALS | 01-01-2011 |
| 02555 | MANHOLE REHABILITATION | 01-01-2011 |
| 02557 | FOLDED AND FORMED PIPE | 01-01-2011 |
| 02558 | CLEANING AND TELEVISION INSPECTION | 01-01-2011 |
| 02571 | CRUSHING SANITARY SEWERS | 01-01-2011 |
| 02581 | STREET LIGHTING CONDUIT | 10-01-2002 |
| 02582 | TRAFFIC SIGNAL POLE ASSEMBLIES | 07-01-2009 |
| 02611 | REINFORCED CONCRETE PIPE | 02-01-2011 |
| 02612 | PRECAST REINFORCED CONCRETE BOX SEWERS | 10-01-2002 |
| 02613 | BAR WRAPPED STEEL CYLINDER PIPE | 01-01-2011 |
| 02621 | GEOTEXTILE | 10-01-2002 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| 02631 | STORM SEWERS | 01-26-2012 |
| 02632 | CAST-IN-PLACE INLETS, HEADWALLS, AND WINGWALLS | 10-01-2002 |
| 02633 | PRECAST CONCRETE INLETS, HEADWALLS, AND WINGWALLS | 10-01-2002 |
| 02642 | CORRUGATED METAL PIPE | 10-01-2002 |
| 02643 | PLATE CULVERT STRUCTURES | 10-01-2002 |
| 02662 | PIPING, VALVES, FITTINGS, AND ACCESSORIES FOR WATER STORAGE TANKS | 01-01-2011 |
| 02711 | HOT MIX ASPHALT BASE COURSE | 07-01-2009 |
| 02712 | CEMENT STABILIZED BASE COURSE | 10-01-2002 |
| 02713 | RECYCLED CRUSHED CONCRETE BASE COURSE | 07-01-2009 |
| 02714 | FLEXIBLE BASE COURSE FOR TEMPORARY DRIVEWAYS | 07-01-2009 |
| 02741 | ASPHALTIC CONCRETE PAVEMENT | 07-01-2009 |
| 02742 | PRIME COAT | 10-01-2002 |
| 02743 | TACK COAT | 10-01-2002 |
| 02751 | CONCRETE PAVING | 07-01-2009 |
| *02752S* | *Concrete Pavement Joints* | *12-29-2009* |
| *02752 | CONCRETE PAVEMENT JOINTS | 10-01-2002 |
| 02753 | CONCRETE PAVEMENT CURING | 10-01-2002 |
| 02754 | CONCRETE DRIVEWAYS | 09-01-2002 |
| 02761 | COLORED CONCRETE FOR MEDIANS AND SIDEWALKS | 09-01-2002 |
| 02762 | BLAST CLEANING OF PAVEMENT | 10-01-2002 |
| 02764 | RAISED PAVEMENT MARKERS | 07-01-2012 |
| 02765 | TEMPORARY AND REMOVABLE REFLECTORIZED PAVEMENT MARKINGS | 07-01-2012 |
| 02767 | THERMOPLASTIC PAVEMENT MARKINGS | 07-01-2012 |
| 02771 | CURB, CURB AND GUTTER, AND HEADERS | 10-01-2002 |
| 02772 | CONCRETE MEDIANS AND DIRECTIONAL ISLANDS | 10-01-2002 |
| 02775 | CONCRETE SIDEWALKS | 10-01-2002 |
| 02811 | LANDSCAPE IRRIGATION | 10-01-2002 |
| 02893 | TRAFFIC SIGNAL CONSTRUCTION | 07-01-2009 |
| 02911 | TOPSOIL | 10-01-2002 |
| 02912 | TREE, PLANT, AND HARDSCAPE PROTECTION | 07-01-2009 |
| 02915 | TREE PLANTING | 01-01-2011 |
| 02921 | HYDROMULCH SEEDING | 01-01-2011 |
| 02922 | SODDING | 07-01-2009 |
| 02951 | PAVEMENT REPAIR AND RESTORATION | 07-01-2009 |
| 02960 | MILLING PAVEMENT | 07-01-2009 |
| 02983 | REMOVAL AND RESTORATION OF BRICK-PAVED STREETS | 10-01-2002 |

**DIVISION 3 - CONCRETE**

| | | |
|---|---|---|
| 03315 | CONCRETE FOR UTILITY CONSTRUCTION | 10-01-2002 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| **DIVISION 4 - MORTAR** | | |
| 04061 | MORTAR | 10-01-2002 |
| 04210 | BRICK MASONRY FOR UTILITY CONSTRUCTION | 10-01-2002 |
| **DIVISION 5 - METALS** | | |
| 05501 | METAL FABRICATIONS | 01-01-2011 |
| **DIVISION 6 - WOOD AND PLASTICS** | | |
| **DIVISION 7 - THERMAL AND MOISTURE PROTECTION** | | |
| **DIVISION 8 - DOORS AND WINDOWS** | | |
| **DIVISION 9 - FINISHES** | | |
| 09901 | PROTECTIVE COATINGS | 01-01-2011 |
| 09971 | HIGH BUILD GLAZED COATINGS | 01-01-2011 |
| **DIVISION 10 - SPECIALTIES** | | |
| **DIVISION 11 – EQUIPMENT** | | |
| **DIVISION 12 - FURNISHINGS** | | |
| **DIVISION 13 - SPECIAL CONSTRUCTION** | | |
| 13111 | CATHODIC PROTECTION FOR WATER TANK INTERIORS | 01-01-2011 |
| 13112 | CATHODIC PROTECTION FOR WATER TANK INTERIORS(ICCP) | 01-01-2011 |
| 13113 | CATHODIC PROTECTION FOR NEW TANK BOTTOMS | 01-01-2011 |
| 13201 | WELDED STEEL WATER STORAGE TANKS | 01-01-2011 |
| 13202 | REHABILITATION OF WELDED STEEL WATER STORAGE TANKS | 01-01-2011 |
| 13203 | TANK CLEAN-UP AND DISINFECTION | 01-01-2011 |
| **DIVISION 14 - CONVEYING SYSTEMS** | | |
| **DIVISION 15 – MECHANICAL** | | |
| 15640 | JOINT BONDING AND ELECTRICAL ISOLATION | 01-01-2011 |
| 15641 | CORROSION CONTROL TEST STATIONS | 01-01-2011 |
| **DIVISION 16 – ELECTRICAL** | | |
| 16010 | BASIC ELECTRICAL REQUIREMENTS | 01-01-2011 |
| 16640 | CATHODIC PROTECTION FOR PIPELINES | 01-01-2011 |

| Doc. No. | Document Title | Doc. Date |
|---|---|---|
| 16641 | CATHODIC PROTECTION FOR EXISTING TANK BOTTOM | 01-01-2011 |
| 16642 | CATHODIC PROTECTION FOR PIPE LINE | 01-01-2011 |
| 16644 | CATHODIC PROTECTION FOR CLARIFIERS | 01-01-2011 |
| 16645 | CATHODIC PROTECTION FOR NEW TANK BOTTOMS | 01-01-2011 |
| 16709 | COMMUNICATIONS CONDUIT | 07-01-2012 |
| 16710 | PULL BOXES | 07-01-2009 |
| 16711 | TRAFFIC SIGNAL CONDUIT | 07-01-2009 |
| 16712 | SOLAR POWERED SCHOOL ZONE FIELD EQUIPMENT | 07-01-2012 |
| 16713 | PRE-FORMED LOOPS | 07-01-2012 |
| 16715 | VEHICLE SIGNAL HEADS | 07-01-2009 |
| 16716 | PEDESTRIAN SIGNAL HEADS | 07-01-2009 |
| 16717 | PROGRAMMABLE VEHICLE SIGNAL HEADS | 07-01-2009 |
| 16718 | LED VEHICLE TRAFFIC SIGNAL MODULE | 07-01-2009 |
| 16719 | COUNTDOWN PEDESTRIAN SIGNAL MODULE | 07-01-2009 |
| 16720 | TRAFFIC SIGNAL CABLE | 07-01-2009 |
| 16724 | EMERGENCY VEHICLE PREEMPTION (EVP) | 07-01-2009 |
| 16725 | DYNAMIC MESSAGE SIGN | 07-01-2012 |
| 16730 | ITS CONTROLLER CABINET ASSEMBLY | 07-01-2012 |
| 16731 | MODEL 2070 CONTROLLER UNIT | 07-01-2009 |
| 16732 | UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM FOR TRAFFIC SIGNAL CABINETS | 07-01-2012 |
| 16733 | MANAGED FIELD HARDENED ETHERNET SWITCH | 07-01-2012 |
| 16734 | WIMAX | 07-01-2012 |
| 16735 | FIBER OPTIC SPLICE ENCLOSURE | 07-01-2012 |
| 16736 | FIBER DISTRIBUTION UNIT | 07-01-2009 |
| 16737 | COMMUNICATION SERVICE BOX | 07-01-2012 |
| 16738 | WIRELESS COMMUNICATION SYSTEM | 07-01-2009 |
| 16739 | BLUETOOTH SPECIFICATION | 07-01-2012 |
| 16740 | SINGLE MODE FIBER OPTIC COMMUNICATION SYSTEM | 07-01-2012 |
| 16742 | VIDEO DETECTION SYSTEMS | 07-01-2009 |
| 16743 | CDMA MODEM ASSEMBLY | 07-01-2009 |
| 16744 | ETHERNET VIDEO MPEG-4 ENCODER | 07-01-2012 |
| 16745 | ETHERNET VIDEO MPEG-4 DECODER | 07-01-2012 |
| 16746 | VIDEO MANAGEMENT SOFTWARE | 07-01-2012 |
| 16747 | PERMANENT COUNT STATION | 07-01-2012 |
| 16748 | SYSTEM INTEGRATION | 07-01-2012 |
| 16750 | ACCESSIBLE PEDESTRIAN PUSH BUTTON STATION | 07-01-2009 |
| 16780 | CCTV FIELD EQUIPMENT | 07-01-2012 |
| 16785 | GPS SERIAL COMMUNICATIONS | 07-01-2012 |


END OF DOCUMENT

Document 00015

LIST OF DRAWINGS

| Sheet No. | Drawing Title |
|---|---|
| 1 | Cover Sheet and Vicinity Map |
| 2 | Sheet Index |
| 3 | Sheet Layout Plan |
| 4 | Drawing Legends |
| 5 | General Notes |
| 6 | Avenue L Sta. 1+00 – Sta. 9+00 |
| 7 | Avenue L Sta. 9+00 – 75th Street |
| 8 | Avenue L Sta. 76th St. – Sta. 8+00 |
| 9 | Avenue L Sta. 8+00 – End |
| 10 | Chimra Sta. 1+00 – Sta. 11+44.43 |
| 11 | Edgar Sta. 1+00 – Sta. 3+29.69 |
| 12 | Hggins Sta. 1+00 – Sta. 11+25 |
| 13 | Higgins Sta. 11+25 – Sta. 21+75 |
| 14 | Hggins Sta. 21+75 – Sta. 32+00 |
| 15 | Higgins Sta. 32+00 – Sta. 41+95.17 |
| 16 | Navigation Sta. 1+00 – Sta. 8+54 |
| 17 | Rand Sta. 1+00 – Sta. 9+65.31 |
| | TRAFFIC CONTROL PLANS |
| 18 | Traffic Control Plan and Notes |
| 19 | Traffic Control Plan Details |
| | CONSTRUCTION DETAILS |
| 20 | Typical Sections and Details |
| 21 | Miscellaneous Sidewalk construction Details |
| 22 | Standard City of Houston Utility Details |
| 23 | Standard City of Houston Paving Details 1 |
| 24 | Standard City of Houston Paving Details 2 |
| 25 | Standard City of Houston Paving Details 3 |
| 26 | Standard City of Houston Paving Details 4 |
| 27 | Standard City of Houston Paving Details 5 |
| 28 | Standard City of Houston SWPPP Details |
| | TREE PROTECTION PLANS |
| 29-35 | Tree Protection Schedule |
| 36-38 | Tree Inventory |
| 39-41 | Tree Protection Details |

END DOCUMENTS

Document 00041

# LIST OF PRE-QUALIFIED ASBESTOS/LEAD ABATEMENT, MOLD & SOIL REMEDIATION, DEMOLITION AND PETROLEUM STORAGE TANK REMOVAL CONTRACTORS

## 1.01 DOCUMENT INCLUDES

A. Authorization

B. List of Authorized Contractors.

## 2.0 RELATED DOCUMENTS

A. Section 13280 – Hazardous Materials Remediation

B. Section 13281&13282 – Abatement of Asbestos/Lead Containing Materials

## 3.0 AUTHORIZATION

A. The list of Contractors Pre-qualified for Asbestos/Lead Abatement, Mold & Soil Remediation, Demolition & Petroleum Storage Tank Removal ("List") was authorized on March 21, 2012, by City of Houston Council Motion No. 12-0180.

B. Only those firms on the List can be utilized by Bidder in subcontracting for asbestos & lead abatement, mold & soil remediation, demolition & petroleum storage tank removal included in the Work.

C. The List is administered by General Services Department. All inquiries should be directed to Gabriel Mussio (832-393-8079).

## 4.0 LIST OF AUTHORIZED CONTRACTORS

A. As of the date specified in paragraph 3.0.A., all contractors listed in paragraph 4.0.B were licensed in the State of Texas for the type of work. Authorized Contractors must maintain there license to be on the list.

B. Authorized Contractors:

1. AAR Incorporated, 6640 Signat Drive, Houston, Texas 77041

2. A & M Environmental, LLC, 6536 Supply Row, Houston, Texas 77011

3. ARC Abatement Inc., 6827 Signat Drive, Houston, Texas 77041

4. AIA General Contractors, Inc., 18331 Running Vine Lane, Spring, Texas 77379

5. Arrow Services, Inc., 10202 Airline Drive, Suite A, Houston, Texas 77037

6. Basic Environmental Group, LLC., 1839 Key Biscayne Court, Houston,

Texas 77065

7. Cherry Environmental Services, Inc., 4501 Cherry Lane, Santa Fe, Texas 77517

8. Clark-Tech Environmental Systems, Inc., 1515 Globe Street, Houston, Texas 77034

9. CRG Environmental Services, LLC., 2504 Avenue I, Rosenberg, Texas 77471

10. DNB Enterprises, Inc., 12969 West Hardy, Houston, Texas 77037

11. Dunphey Petroleum Services, Inc., 3505 Daphne, Houston, Texas 77021

12. EC Government Services, 5850 San Felipe, Suite 400, Houston, Texas 77057

13. Effective Environmental, Inc., 9950 Chemical Road, Pasadena, Texas 77507

14. GenTech Construction Company, LLC., 2211 West 34th Street, Houston, Texas 77018

15. Hazard Assessment Leaders, Inc., dba HAL, Inc., 5311 Petty Street, Houston, Texas 77007

16. Inland Environmental, Ltd., PO Box 6751, Kingwood, Texas 77325

17. J.T.B. Services, Inc., 9026 Lambright, Houston, Texas 77075

18. NCM, 16421 Aldine Westfield Road, Houston, Texas 77032

19. PfP Abatement Group, LLC., 3823 Shadow Trail Drive, Houston, Texas 77084

20. PEMCO, Inc., PO Box 2009, Pearland, Texas 77588-2009

21. RNDI Companies, Inc., 2255 Ridge Road, Suite 216, Rockwell, Texas 75807

22. Separation Systems Consultants, Inc., 17041 El Camino Real, Suite 200 Houston, Texas 77058

23. Texas Environmental Control, Inc., 4623 Steffani Lane, Houston, Texas 77041

24. Weston Solutions, Inc., 5599 San Felipe, Suite 700, Houston, Texas 77056

25. 1 Priority Environmental Services, Inc., 2573 Gravel Drive, Fort Worth, Texas 76118

END OF DOCUMENT

Document 00042

DESIGNATED SUBCONTRACTORS AND SUPPLIERS

A. Subcontract work for the following Sections to firm(s) listed and for reason(s) stated below:

**********
*Edit following list. Ensure individual Sections include names of designated firms and the reason is stated here. Use the following sample format.*
**********

1. [Section 12610- Open Office Furniture; procurement and installation of Open Office Furniture. The City has an existing procurement/installation contract with the firm stated in Section 12610.]

END OF DOCUMENT

Document 00200

TABLE OF CONTENTS

INSTRUCTIONS TO BIDDERS


| PARA | TITLE | PAGE |
|---|---|---|
| 1.0 | *RELATED DOCUMENTS* | 1 |
| 2.0 | *DEFINITIONS* | 1 |
| 3.0 | *NOTICE TO BIDDERS* | 2 |
| 4.0 | *BID DOCUMENTS* | 2 |
| 5.0 | *EXAMINATION OF DOCUMENTS, SITE, AND LOCAL CONDITIONS* | 2 |
| 6.0 | *INTERPRETATIONS DURING BIDDING* | 2 |
| 7.0 | *ADDENDA* | 3 |
| 8.0 | *SUBSTITUTION OF PRODUCTS* | 3 |
| 9.0 | *PREPARATION OF BIDS* | 3 |
| 10.0 | *BID SUBMISSION* | 3 |
| 11.0 | *BID SECURITY* | 4 |
| 12.0 | *SUBCONTRACTORS AND SUPPLIERS* | 4 |
| 13.0 | *MODIFICATION OR WITHDRAWAL OF BID* | 4 |
| 14.0 | *BID DISQUALIFICATION* | 4 |
| 15.0 | *PREBID MEETING* | 5 |
| 16.0 | *OPENING OF BIDS* | 5 |
| 17.0 | *EVALUATION AND CONSIDERATION OF BIDS* | 5 |
| 18.0 | *ACCEPTANCE OF THE BID* | 5 |

# Document 00200

# INSTRUCTIONS TO BIDDERS

1.0 *RELATED DOCUMENTS*

A. Document 00210 – Supplementary Instructions to Bidders.

B. Document 00320 – Geotechnical Information.

C. Document 00330 – Existing Conditions.

D. Document 00410 – Bid Form, Parts A & B.

E. Document 00495 – Post-Bid Procedures.

F. Document 00520 – Agreement.

G. Document 00700 – General Conditions.

H. Document 00800 – Supplementary Conditions.

2.0 *DEFINITIONS*

A. Definitions set forth in Document 00700 – General Conditions and in other documents of Project Manual, are applicable to Bid Documents.

B. *Addendum:* Written or graphic instrument issued prior to Bid opening, which clarifies, modifies, corrects, or changes Bid Documents.

C. *Alternate:* The total amount bid for additions to work, as described in Section 01110 – Summary of Work. Each Alternate includes cost of effects on adjacent or related components, and Bidder's overhead and profit.

D. *Bid:* A complete and properly signed offer to perform the Work in accordance with this Document and Document 00210 – Supplementary Instructions to Bidders.

E. *Bid Date:* Date and time set for receipt of Bids as stated in Document 00210 – Supplementary Instructions to Bidders, or as modified by Addenda.

F. *Bid Documents:* Project Manual, Drawings, and Addenda.

G. *Bid Supplement: A* Bid submittal that is required in Document 00410 – Bid Form.

H. *Bidder:* Person or firm, identified in Document 00410B – Bid Form – Part B, including its successors, and its authorized representative.

I. *Code:* Code of Ordinances, Houston, Texas.

J. *Low Bidder:* Apparent successful Bidder that qualifies as a responsible Bidder and that submits Bid with lowest Total Bid Price.

K. *Project Manager:* Person designated in Document 00100 – Advertisement for Bids and Document 00220 – Request for Bid Information to represent the City during bidding and post-bid periods.

L. *Project Manual:* Volume assembled for the Work that includes the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

M. *Security Deposit:* A certified check, cashier's check, or bid bond in the amount of 10 percent of the Total Bid Price.

N. *Total Bid Price:* Total amount bid for performing the Work as identified by Bidder in Document 00410B – Bid Form – Part B, which amount includes:

1. Stipulated Price;

2. Total Base Unit Prices;

3. Total Extra Unit Prices;

4. Total Cash Allowances; and

5. Total Alternates.

3.0 *NOTICE TO BIDDERS*

A. The City of Houston Fair Campaign Ordinance makes it unlawful for a Contractor to offer any contribution to a candidate for City elective office (including elected officers and officers-elect) during a certain period of time prior to and following the award of the Contract by the City Council. The term "Contractor" includes proprietors of proprietorships, all partners of partnerships, and all officers, directors, and holders of 10 percent or more of the outstanding shares of corporations. A statement disclosing the names and business addresses of each of those persons will be required to be submitted with each bid or proposal; for a City Contract. Bidder shall complete and submit Document 00452 – Form A, Contractor Submission List, City of Houston Fair Campaign Ordinance, with its Bid to comply with this requirement. See Chapter 18 of the Code for further information.

B. Chapter 15, Article VIII, of the City's Code provides that no contract shall be let, nor any other business transaction entered into, by the City with any person indebted to the City or a qualifying entity, if the contractor or transaction comes within the provisions of Section 15-1 (c) of the Code. Exceptions are provided in Section 15-126 of the Code. Bidder shall complete and submit Document 00455 – Affidavit of Ownership or Control, with its Bid to comply with this requirement.

C. Neither bidder(s) nor any person acting on bidder(s)'s behalf shall attempt to influence the outcome of the award by the offer, presentation or promise of gratuities, favors, or anything of value to any appointed or elected official or employee of the City of Houston, their families or staff members. All inquiries regarding the solicitation are to be directed to the designated City Representative identified on the first page of the solicitation. Upon issuance of the solicitation through the pre-award phase and up to the date the City Secretary publicly posts notice of any City Council agenda containing the applicable award, aside from bidder's formal response to the solicitation, through the pre-award phase, written requests for clarification during the period officially designated for such purpose by the City Representative, neither bidder(s) nor persons acting on their behalf shall communicate with any appointed or elected official or employee of the City of Houston, their families or staff through written or oral means in an attempt to persuade or influence the outcome of the award or to obtain or deliver information intended to or which could reasonably result in an advantage to any bidder. However, nothing in this paragraph shall prevent a bidder from making public statements to the City Council convened for a regularly scheduled session after the official selection has been made and placed on the City Council agenda for action, or to a City Council committee convened to discuss a recommendation regarding the solicitation.

4.0 *BID DOCUMENTS*

A. The Bid Documents may be obtained at location specified in Document 00210 – Supplementary Instructions to Bidders.

B. The Bid Documents are made available only for the purpose of bidding on the Work. Receipt of Bid Documents does not grant a license for other purposes.

C. On receipt of Bid Documents, Bidder shall verify that documents are legible and complete, compare contents of Project Manual with Document 00010 – Table of Contents, and compare Index of Drawings with Document 00015 – List of Drawings. Bidder shall notify Project Manager if Bid Documents are incomplete.

D. If City of Houston Standard Specifications or Standard Details are required by the Project Manual, Bidder shall refer to Document 00210 – Supplementary Instructions to Bidders for purchase information.

5.0 *EXAMINATION OF DOCUMENTS, SITE, AND LOCAL CONDITIONS*

A. Bidder shall examine Project site, become familiar with local conditions under which the Work shall be performed, conduct appropriate investigations, and correlate personal observations with requirements of the Bid Documents before submitting a Bid.

B. Bidder shall make site investigations to the extent Bidder deems necessary to ascertain extent of subsurface conditions.

C. Failure of Bidder to perform the investigations prior to submitting a Bid does not relieve Bidder of responsibility for investigations, interpretations and proper use of available information in the preparation of its Bid.

D. Bidder shall observe limitations of access to occupied or restricted site as stated in Document 00210 – Supplementary Instructions to Bidders.

6.0 *INTERPRETATIONS DURING BIDDING*

A. Bidder shall immediately submit Document 00220 – Request for Bid Information to Project Manager upon finding errors, discrepancies, or omissions in Bid Documents. Confirmation of receipt of questions by the City is the responsibility of Bidder. Verbal discussions and answers are not binding.

B. Document 00220 – Request for Bid Information must be received at least 10 days before the Bid Date to allow issuance of Addenda in accordance with Paragraph 7.O.D. Replies, if issued, are by Addenda.

7.0 *ADDENDA*

A. Addenda that affect bidding requirements are applicable only during applicable only through issuance of the Notice to Proceed. Addenda that affect the Contract are a part of the Contract.

B. BIDDERS WHO SUBMIT A BID ON THIS PROJECT SHALL BE PRESUMED TO HAVE RECEIVED ALL ADDENDA AND TO HAVE INCLUDED ANY COST THEREOF IN THEIR BIDS, REGARDLESS OF WHETHER THEY ACKNOWLEDGE THE ADDENDA OR NOT.

C. The City will make Addenda available at same location where the Bid Documents may be obtained. The City will notify plan holders of record when Addenda are available. Bidders are responsible for obtaining Addenda after notification.

D. No Addendum will be issued later than noon on Monday before Bid Date, except Addenda with minor clarifications, withdrawing request for Bids, or postponing Bid Date.

8.0 *SUBSTITUTION OF PRODUCTS*

A. No substitutions of Products will be considered during the bidding period.

9.0 *PREPARATION OF BIDS*

A. Bidder shall fill in applicable blanks in Document 00410A&B – Bid Form – Parts A & B and Bid Supplements. In addition, Bidder shall bid all Alternates. Bidder shall properly sign Document 00410B -Bid Form.

B. Bidder shall initial all pages, except signature page, of Document 00410B – Bid Form – Part B.

C. Bidder is responsible for all costs incurred by the Bidder, associated with preparation of its Bid and compliance with Post-bid Procedures.

D. Bidder may not adjust preprinted price on line items stating "Fixed Unit Price" in the description on the Bid Form.

E. Bidder may increase preprinted price on line items stating "Minimum Bid Price" in the description on the Bid Form by crossing out the minimum and inserting revised price on the line above.

F. Bidder may decrease preprinted price on line items stating "Maximum Bid Price" in the description on the Bid Form by crossing out the maximum and inserting revised price on the line above.

G. Bidder shall insert a price no greater than the maximum preprinted range and no less than the preprinted range for line items stating "Fixed Range Unit Price" in the description on the Bid Form by crossing out prices noted and inserting revised price on the line above.

H. Bidder may not adjust Cash Allowance amounts.

10.0 *BID SUBMISSION*

A. City Secretary will receive Bids on Bid Date at location specified in Document 00210 – Supplementary Instructions to Bidders.

B. Bids submitted after Bid Date will be returned to Bidder unopened.

C. Verbal, facsimile, or electronic Bids are invalid and will not be considered.

D. Bidder shall submit in person or by mail one copy of the signed Document 00410 – Bid Form, Parts A and B, along with required Security Deposit, and required Bid Supplements, in a sealed, opaque envelope. In addition, Bidder shall clearly identify Project, Bid Date and Bidder's name on outside of envelope. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed for postal delivery.

11.0 *BID SECURITY*

A. Bidder shall submit a Security Deposit with its Bid.

B. Certified Check or Cashier's Check

1. Bidder shall make check payable to the City of Houston.

2. A check is submitted on the condition that if Bidder is named Low Bidder and fails either to timely and properly submit documents required in Document 00495 – Post-Bid Procedures, the City will cash the check in accordance with Paragraph 11.0.E.

C. Bid Bond

1. The bid bond must be a valid and enforceable bond, signed by a surety that complies with other requirements set out by law.

2. The bid bond must name the City of Houston as obligee, and be signed by the Bidder as principal and signed and sealed by the surety.

3. The bid bond must be conditioned such that if Bidder is named Low Bidder and then fails to timely and properly submit documents required in Document 00495 – Post-Bid Procedures, surety will be obligated to pay to the City an amount in accordance with Paragraph 11.0.E.

D. Security Deposits will be retained until after the Contract is awarded or all Bids are rejected.

E. Low Bidder forfeits Security Deposit if it fails to timely and properly submit documents required in Document 00495 – Post-Bid Procedures. The City may claim an amount equal to the difference between the Total Bid

Price of the defaulting Bidder and the Total Bid Price of the Bidder awarded the Contract. If Security Deposit is a check, the City will reimburse any remaining balance to the defaulting Bidder.

12.0 *SUBCONTRACTORS AND SUPPLIERS*

A. The City may reject proposed Subcontractors or Suppliers.

B. Refer to Document 00800 – Supplementary Conditions, for MWBEPDBE, DBE and SBE goals.

13.0 *MODIFICATION OR WITHDRAWAL OF BID*

A. A Bidder may modify or withdraw a Bid submitted before the Bid Date by written notice to the City Secretary. The notice may not reveal the amount of the original Bid and must be signed by the Bidder.

B. Bidder may not modify or withdraw its Bid by verbal, facsimile, or electronic means.

C. A withdrawn Bid may be resubmitted up to the time designated for receipt of Bids.

14.0 *BID DISQUALIFICATION*

A. The City may disqualify a Bid if the Bidder:

1. fails to provide required Security Deposit in the proper amount;

2. improperly or illegibly completes information required by the Bid Documents;

3. fails to sign Bid or improperly signs Bid;

4. qualifies its Bid; or

5. improperly submits its Bid.

B. When requested, Low Bidder shall present satisfactory evidence that Bidder has regularly engaged in performing construction work as proposed, and has the capital, labor, equipment, and material to perform the Work.

15.0 *PREBID MEETING*

A. A prebid meeting is scheduled to be held at the place, time, and date listed in Document 00210 – Supplementary Instructions to Bidders.

B. All Bidders, subcontractors, and suppliers are invited to attend.

C. Representatives of City Engineer will attend.

16.0 *OPENING OF BIDS*

A. Bids are opened by the City Secretary and publicly read in City Council Chambers on the Public Level in City Hall Annex at 11:00 a.m. on Bid Date.

B. Place and date of Bid opening may be changed in accordance with Sections 15-3(b)(5) and 15-3(b)(6) of the City Code.

17.0 *EVALUATION AND CONSIDERATION OF BIDS*

A. Project Manager will tabulate, record and evaluate Bids.

B. The City may reject all Bids or may reject any defective Bid.

18.0 *ACCEPTANCE OF THE BID*

A. The City will send to Low Bidder Document 00498 – Notice of Intent to Award. Acceptance by the City is conditioned upon Bidder's timely and proper submittal of documents required in Document 00495 – Post-Bid Procedures.

B. The Bid remains open to acceptance and is irrevocable for the period of time stated in Document 00410A – Bid Form – Part A.

END OF DOCUMENT

Document 00210

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

The following Paragraphs modify Document 00200 - Instructions to Bidders. Where a portion of the Instructions to Bidders is modified or deleted by these Supplementary Instructions, the unaltered portions of the Instructions to Bidders remains in effect.

2.0 – DEFINITIONS: Add the following Paragraphs to this Section:

O. *Office of Business Opportunity (OBO):* All references to Affirmative Action Contract Compliance Division (AACC) set forth in Document 00700 – General Conditions and in other documents of the Project Manual, shall refer to, and include, the Office of Business Opportunity.

3.0 - NOTICE TO BIDDERS: Add the following Paragraph to this Section:

C. The City will award this contract to a "Local Business", as that term is defined in Section 15-176 of the City of Houston Code of Ordinances ("the Code"):

- If the bid of the Local Business is less than $100,000 and is the lowest responsible bid or is within 5% of the lowest bid received, or
- If the bid of the Local Business is more than $100,000 and is the lowest responsible bid or is within 3% of the lowest bid received, and
- Unless the Director determines that such an award would unduly interfere with contract needs, as provided in Section 15-181 of the Code.

If there is no bid of a Local Business that meets these criteria, the City will award the contract to the lowest responsible bidder.

4.0 – BID DOCUMENTS: Add the following Paragraphs to this Section:

**A. Add the following Paragraph A.1:**

1. Bid documents may only be obtained electronically at the City's website: http://bidsets.publicworks.houstontx.gov/.

**D. Add the following Paragraph D.1:**

1. Copies of the City Standard Specifications and Details may be acquired at no cost on the City's website **http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction/92-specifications/208-division-02-16-standard-specifications.html**

E. The following plan rooms, whose names, addresses, phone and fax numbers were last updated on April 9, 2007, have been authorized by the City to display Bid Documents for examination:
(Note: The Bid Documents furnished to the plan rooms for examination can be in electronic format, in hard copies, or in any other formats pertaining to each City Contracting Division's discretion.)

1. AMTEK Information Services, Inc., 4001 Sherwood Lane, Houston, TX 77092, 713-956-0100, Fax 713-956-5340, Email: planroom@amtekusa.com

2. Associated Builders & Contractors, Inc., (ABC), 3910 Kirby, Suite 131, Houston, TX 77098-4151, 713-523-6222, Fax 713-874-0747. Email: lori@abchouston.org

3. Associated General Contractors (AGC-BB) Building Branch, 3825 Dacoma, Houston, TX 77092-8717, 713-843-3700, Fax 713-843-3701. Email: karla.s@agchouston.org

4. Associated General Contractors, (AGC-HHUI), Highway, Heavy Utilities and Industrial Branch, 2400 Augusta St., Suite 180, Houston, TX 77057, 713-334-7100, Fax 713-334-7130. Email: houston@agctx.org (Attention: Mel Keyser)

5. Construction Information Network, 1225 North Loop West, Suite 550, Houston, TX 77008, 713-868-2233 ext. 329, Fax 866-852-2713. Email: paul.tilford@cnsx.com

6. F. W. Dodge Corporation, 4101 Greenbriar, Suite 320, Houston, TX 77098, 713-529-4895, Fax 713-524-7639. Email: terrie_harris@mcgraw-hill.com

7. Hispanic Contractors Association of Houston (HCA-GHA), 11 Parker Road, Suite 7, Houston, TX 77241, 713-699-2732 or 832-754-3705, Fax 713-695-1556, Email: hispanicontractorsassociation@yahoo.com; or Randymagdaleno@yahoo.com

8. Houston Minority Business Development Center, 2900 Woodridge, Suite 124, Houston, TX 77087, 713-644-0821, Fax 713-644-3523. Email: gtamez@gacompanies.com

9. Reed Construction Data, 30 Technology Parkway South, Suite 100, Norcross, GA – 30092-8629. Tel. 1-800-424-3996 or 1-800-699-8640; Fax 1-800-317-0870 or 1-800-508-5370.

10. The Builders' Exchange of Texas, Inc., 3910 Kirby, Suite 131, Houston, TX 77098, 210-564-6900, Fax: 210-564-6921, Email: houston@bxtx.com

**F. Add the following Paragraph F.1:**

1. **Designation as a City Business or Local Business**

To be designated as a City or Local Business for the purpose of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the Hire Houston First Application and Affidavit to the Director of the Mayor's Office of Business Opportunity (OBO) and receive notice that the designation has been approved prior to submission of a bid or proposal. Submit with your bid a valid official letter from OBO with your designation as a City or Local Business.

5.0 - EXAMINATION OF DOCUMENTS, SITE, AND LOCAL CONDITIONS: Insert the following paragraph:

D. Add the following Paragraph D.1:

1. Work will be performed in public right-of-way. The site may be examined at any time during daylight hours.

9.0 – PREPARATION OF BIDS: Add the following Paragraph I to this Paragraph:

I. For math errors the City encounters in analyzing Bids, the following guidance will be used:

| In the event of a conflict between: | The Bid Price is: |
|---|---|
| 1. Individual Unit Price and Extension of that Unit Price | Individual Unit Price times Estimated Quantity |
| 2. A Unit Price extension and total of Unit Price Extensions | Sum of all Individual Unit Price Extensions |
| 3. Individual Alternate and total of Alternates | Sum of all Individual Alternates |
| 4. Individual subtotals for Stipulated Price, Base Unit Prices, Extra Unit Prices, Contractor Bonus, Cash Allowances, and Alternates; and the Total Bid Price | Sum of Individual subtotals for Stipulated Price, Base Unit Prices, Extra Unit Prices, Contractor Bonus, Cash Allowances and Alternates |

10.0 – BID SUBMISSION: Add the following Paragraph A.1 to this Section:

A. Add the following Paragraph A.1:

1. City Secretary will receive Bids at 900 Bagby, Room P101, Houston, Texas until 10:30 a.m., local time on October 8, 2015.

15.0 – PREBID MEETING: Add the following Paragraph A.1 to this Section:

A. Add the following Paragraph A.1:

1. A Prebid Meeting will be held at 9:00 A.M. on Tuesday, September 29, 2015, in 14th Floor, Conference Room No. 1453 at 611 Walker, Houston, Texas 77002.

END OF DOCUMENT

Document 00220

# REQUEST FOR BID INFORMATION

PROJECT: Safe Sidewalk Program (Package III)

PROJECT No.: WBS No. N-320610-B125-4

TO: Sam Kanu, P.E.
14th Floor
611 Walker, Houston, Texas 77002

Phone No. (832) 395-2213
Fax No. (832) 395-2252
Email Addr. sam.kanu@houstontx.gov

(Type or Print question legibly; use back if more space is needed)

_____
_____
_____
_____
_____
_____
_____
_____
_____

This request relates to _____ and/or _____
Drawing / Detail No. Specification Section No.

Attachments to this request: _____
_____
_____

_____ _____
Signature Date

_____
(Type or Print Name)

_____
(Type or Print Company Name)

END OF DOCUMENT

Document 00410A

BID FORM – PART A

To: **The Honorable Mayor and City Council of the City of Houston**
**City Hall Annex**
**900 Bagby Street**
**Houston, Texas 77002**

Project: Safe Sidewalk Program, Package 3
Project No.: WBS No. N-320610-B125-4
Bidder: _____
(Print or type full name of proprietorship, partnership, corporation, or joint venture.)

**1.0 OFFER**

**A. Total Bid Price:** Having examined the Project location and all matters referred to in Bid Documents for the Project, we, the undersigned, offer to enter into a Contract to perform the Work for the Total Bid Price shown on the signature page of this Document.

**B. Security Deposit:** Included with the Bid is a Security Deposit in the amount of 10 percent of the Total Bid Price subject to terms described in Document 00200 – Instructions to Bidders.

**C. Period for Bid Acceptance:** This offer is open to acceptance and is irrevocable for 90 days from Bid Date. That period may be extended by mutual written agreement of the City and Bidder.

**D. Addenda**: All Addenda have been received. Modifications to Bid Documents have been considered and all related costs are included in the Total Bid Price.

**E. Bid Supplements:** The following documents are attached:

[X] Security Deposit *(as defined in Document 00200 – Instructions to Bidders)*
[X] Document 00450 - Bidder's Statement of MWBE/PDBE/DBE/SBE Status
[X] Document 00452 - Contractor's Submission List - Fair Campaign Ordinance Form A
[X] Document 00453 – Bidder's Statement of Residency *(not required for AIP funded project)*
[X] Document 00454 - Affidavit of Non-interest
[X] Document 00455 - Affidavit of Ownership or Control
[ ] Document 00456 - Bidder's Certificate of Compliance with Buy American Program *(required for AIP funded project)*
[X] Document 00457 – Conflicts of Interest Questionnaire
[ ] Document 00458 - Bidder's Certificate Regarding Foreign Trade Restriction *(required for AIP funded project)*
[ ] Document 00459 - Contractor's Statement Regarding Previous Contracts Subject to EEO *(required for AIP funded project)*
[X] Document 00470 – Pay or Play Acknowledgement Form (POP 1-A)
[ ] Others as listed: _____

## 2.0 CONTRACT TIME

**A.** If offer is accepted, Contractor shall achieve Date of Substantial Completion within 90 days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

REST OF PAGE INTENTIONALLY LEFT BLANK

Document 00410B

BID FORM – PART B

**1.0 TOTAL BID PRICE HAS BEEN CALCULATED BY BIDDER, USING THE FOLLOWING COMPONENT PRICES AND PROCESS (PRINT OR TYPE NUMERICAL AMOUNTS):**

**A. STIPULATED PRICE: $N/A**
(Total Bid Price; minus Base Unit Prices, Extra Unit Prices, Contractor Incentive/bonus, Cash Allowances and All Alternates, if any)

Document 00410B

BID FORM – PART B

**B. BASE UNIT PRICE TABLE:**

| Item No. | Control No. | Item Description | Unit Measure | Unit Quantity | Unit Price | Total in figures |
|---|---|---|---|---|---|---|
| **GENERAL PROJECT ITEMS** | | | | | | |
| 1 | 01502 | Mobilization - Fixed Unit Price | LS | 1 | $29,405.35 | $29,405.35 |
| 2 | 01555 | Traffic Control and Regulation, including Flagmen | LS | 1 | $14,702.68 | $14,702.68 |
| 3 | 01504 01570 | Reinforced filter fabric fence, filter fabric barrier, gravel bag inlet protection barrier, or inlet protection barrier | LF | 267 | | |
| 4 | 02233 | Clearing and grubbing | AC | 1.12 | | |
| 5 | 02915 01562 | Tree Removal | EA | 6 | | |
| 6 | 02912 | Tree Planting | EA | 3 | | |
| 7 | 02922 | Sodding | SY | 3607 | | |
| 8 | 02221 02631 02506 | Remove and Replace Yard Drain Pipes | LF | 60 | | |
| 9 | 01562 | Branch and/or Root Pruning and shaving | EA | 53 | | |
| 10 | 01562 02775 | Checker Plates | SF | 35 | | |

## B. BASE UNIT PRICE TABLE:

| Item No. | Control No. | Item Description | Unit Measure | Total Unit Quantity | Unit Price | Total in Figures |
|---|---|---|---|---|---|---|
| 11 | 01110 | Relocate Existing Wrought Iron Fence and or Chain Link Fence | LF | 184 | | |
| 12 | 01110 | Relocate Existing Sign, Marker, Post or Mail Box | EA | 3 | | |
| 13 | 01110 | Remove and relocate bollards | EA | 1 | | |
| 14 | 01580 | Project Identification Signs | EA | 1 | | |
| 15 | 02768 | Repaint Existing Crosswalks | LF | 24 | | |
| 16 | 01110 | Install New Sign | EA | 1 | | |
| 17 | 01110 | Remove and relocate existing Chain Link Fence | LF | 200 | | |
| 18 | 01110 | Remove and relocate existing Wrought Iron Fence | LF | 440 | | |
| **STORM SEWER ITEMS** | | | | | | |
| 19 | 02315 | Regrade Existing Ditch for Positive Drainage | LF | 2985 | | |
| 20 | 02611<br>02631 | 24-inch Reinforced Concrete Pipe Culvert | LF | 506 | | |
| 21 | 02631<br>02633 | Install Storm Sewer Junction Box | EA | 1 | | |
| 22 | 02631<br>02633 | Install Area Inlet | EA | 1 | | |
| 23 | 02221-S<br>02761 | Remove and Dispose of Existing Culvert less than 24" in diameter | LF | 334 | | |
| **WATER ITEMS** | | | | | | |
| 24 | 02526<br>02811<br>01755 | Relocate Water Meter or Sprinkler Head | EA | 12 | | |
| 25 | 02529<br>02811<br>01755 | Relocate existing 2" water blow off valve | EA | 1 | | |
| 26 | 02086 | Adjust Existing Water Valve Box or Water Meter to Grade | EA | 4 | | |
| **PAVING ITEMS** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | 02221 | Saw Cut and Remove and dispose existing concrete/or asphalt sidewalk, driveways, gravels, walkways, retaining wall, headwalls, curb and gutter, etc., all depths and material | SY | 2291 | | |
| 28 | 02315 | Excavation for sidewalk | CY | 2974 | | |
| 29 | 02319 | Borrow | CY | 100 | | |
| 30 | 02754 | Construct new 6-inch Concrete Driveways, complete in place | SF | 17046 | | |
| 31 | 02754 | Construct 7-inch Concrete Commercial Driveway, complete in place | SF | 3644 | | |
| 32 | 02771 | Construct 6-inch Concrete Curb and Gutter, complete in place | LF | 479 | | |
| 33 | 02771 | Construct 6-inch Saw-tooth Concrete curb, complete in place | LF | 2729 | | |
| 34 | 02775 | Construct New 4 1/2-inch Concrete Sidewalks, compete in place | SF | 38243 | | |
| 35 | 02775 | Wheelchair Ramps including truncated domes | SF | 2688 | | |
| 36 | 02330<br>03310 | Concrete Slope Paving, complete in place | SF | 2777 | | |
| 34 | 03310 | Cement Stabilized Sand, complete in place | SF | 2777 | | |
| 35 | 03320 | Construct concrete retaining wall | CY | 2.2 | | |
| **TOTAL BASE UNIT PRICES** | | | | | | $_____ |

## C. EXTRA UNIT PRICE TABLE:

| Item No. | Control No. | Item Description | Unit Measure | Unit Quantity | Unit Price | Total in figures |
|---|---|---|---|---|---|---|
| 36 | 02318 | Extra Excavation Around Obstructions - Minimum Bid Price | CY | 100 | $_____ [$25.00] | $_____ [$2,500.00] |
| 37 | 02318 | Extra Hand Excavation | CY | 100 | $_____ [$18.00] | $_____ [$1,800.00] |
| 38 | 02318 | Extra Machine Excavation | CY | 100 | $_____ [$20.00] | $_____ [$2,000.00] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 39 | 02315 | Extra Excavation for Sidewalk | CY | 1200 | $_____ [$20.00] | $_____ [$24,000.00] |
| 40 | 02775 | Extra Remove and Replace Sidewalks - Minimum Bid Price | SF | 100 | $_____ [$8.00] | $_____ [$800.00] |
| 41 | 02775 | Extra Remove and Replace Pavement with or without Asphalt - Minimum Bid Price | SY | 83 | $_____ [$30.00] | $_____ [$2,490.00] |
| 42 | 02714 | Extra Gravel for Temporary Driveway | SF | 100 | $_____ [$30.00] | $_____ [$3,000.00] |
| 43 | 01110 | Extra Relocate, preserve, protect and reestablish school solar traffic sign system | EA | 1 | $_____ [$1200.00] | $_____ [$1200.00] |
| 44 | 01110 | Extra 3"-6" PVC yard drain pipe complete in place | LF | 100 | $_____ [$4.00] | $_____ [$400.00] |
| 45 | 02611 02631 | Install 18-inch Elliptical Reinforced Concrete Pipe Culvert | LF | 406 | $_____ [$75.00] | $_____ [$30,450.00] |
| **TOTAL EXTRA UNIT PRICES** | | | | | | $_____ [$68,640.00 |

## D. CASH ALLOWANCE TABLE:

| Cash Allowance No. | Cash Allowance Short Title | Cash Allowance in figures |
|---|---|---|
| 1 | Street Cut Permit | $9,000.00 |
| 2 | Centerpoint Energy removal and replacement of illumination pole | $10,000.00 |
| **TOTAL CASH ALLOWANCES** | | $19,000.00 |

## E. ALTERNATE TABLE:

| Alternate No. | Alternate Short Title | Cash Allowance in figures |
|---|---|---|
| | N/A | |
| **TOTAL ALTERNATES** | | $_____ |

**F. TOTAL BID PRICE:** $_____
(Add Totals for Items A., B., C., D., and E. above)

**2.0 SIGNATURES:** By signing this Document, I agree that I have received and reviewed all Addenda and considered all costs associated with the Addenda in calculating the Total Bid Price.

Bidder: _____
(Print or type full name of your proprietorship, partnership, corporation, or joint venture.*)

**By: _____
Signature Date

Name: _____
(Print or type name) Title

Address: _____
(Mailing)

_____
(Street, if different)

Telephone and Fax Number: _____
(Print or type numbers)

* If Bid is a joint venture, add additional Bid Form signature sheets for each member of the joint venture.

** Bidder certifies that the only person or parties interested in this offer as principals are those named above. Bidder has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding.

Note: This document constitutes a government record, as defined by § 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in § 37.10 of the Texas Penal Code.

Footnotes for Tables B through E:

(1) Fixed Unit Price determined prior to Bid. Cannot be adjusted by the Bidder.

(2) Minimum Bid Price determined prior to Bid. Can be increased by the Bidder by crossing out the Minimum and noting revised price on the line above.

(3) Maximum Bid Price determined prior to Bid. Can be decreased by Bidder by crossing out the Maximum and noting revised price on the line above.

END OF DOCUMENT

Document 00430

# BIDDER'S BOND

**THAT WE**, _____, as Principal,
(Bidder)
("Bidder"), and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of _____ Dollars ($_____) (an amount equal to 10 percent of the Total Bid Price, including Cash Allowances and Alternates, if any, for the payment of which sum, well and truly to be made to the City of Houston and its successors, the Bidder and Surety do bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally.

**THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:**

**WHEREAS**, the Bidder has submitted on or about this day a proposal offering to perform the following:

_____
(Project Name, Location and Number)
in accordance with the Drawings, Specifications, and terms and conditions related thereto to which reference is hereby made.

**NOW, THEREFORE**, if the Bidder's offer as stated in the Document 00410 – Bid Form is accepted by the City, and the Bidder executes and returns to the City Document 00520 – Agreement, required by the City, on the forms prepared by the City, for the Work and also executes and returns the same number of the Performance, Payment and Maintenance Bonds (such bonds to be executed by a Corporate Surety authorized by the State Board of Insurance to conduct insurance business in the State of Texas, and having an underwriting limitation in at least the amount of the bond) and other submittals as required by Document 00495 - Post-Bid Procedures, in connection with the Work, within the Contract Time, then this obligation shall become null and void; otherwise it is to remain in full force and effect.

If Bidder is unable to or fails to perform the obligations undertaken herein, the undersigned Bidder and Surety shall be liable to the City for the full amount of this obligation which is hereby acknowledged as the amount of damages which will be suffered by the City on account of the failure of such Bidder to perform such obligations, the actual amount of such damages being difficult to ascertain.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other Party at the address prescribed in the Contract documents, or at such other address as the receiving Party may hereafter prescribe by written notice to the sending Party.

**IN WITNESS THEREOF**, the Bidder and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

By: _____
Name:
Title:

ATTEST/SURETY WITNESS: (SEAL)

By: _____
Name:
Title:
Date:

_____
(Name of Bidder)

By: _____
Name:
Title:
Date:

_____
(Full Name of Surety)

_____
(Address of Surety for Notice)

_____

_____
(Telephone Number of Surety)

By: _____
Name:
Title:
Date:

END OF DOCUMENT

Document 00450

BIDDER'S STATEMENT OF MWBE/PDBE/DBE/SBE STATUS

This certifies that the status of the Bidder, _____, in
(Bidder's Name)
regard to the City of Houston Code of Ordinances, Chapter 15, Article V, relating to City-wide percentage goals for contracting with Minority and Women-owned Business Enterprises (MWBE) and Disadvantaged Business Enterprises (DBE), Chapter 15, Article VI, relating to City-wide percentage goals for contracting with Persons with Disabilities Business Enterprises (PDBE) and Chapter 15, Article IX, relating to City-wide percentage goals for contracting with a Small Business Enterprise (SBE) is as follows:

1. Bidder (individual, partnership, corporation) is [__] is not [__] a Minority Business Enterprise as certified by the Office of Business Opportunity.

2. Bidder (individual, partnership, corporation) is [__] is not [__] a Women-owned Business Enterprise as certified by the Office of Business Opportunity

3. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Persons with Disabilities Business Enterprise as defined above.

4. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Disadvantaged Business Enterprise as defined above.

5. Bidder (individual, partnership, corporation) does [__] does not [__] declare itself to be a Small Business Enterprise as defined above.

Signature: _____

Title: _____

Date: _____

END OF DOCUMENT

Document 00452
Form A
CONTRACTOR SUBMISSION LIST
CITY OF HOUSTON FAIR CAMPAIGN ORDINANCE

The City of Houston Fair Campaign Ordinance makes it unlawful for a Contractor to offer any contribution to a candidate for City elective office (including elected officers-elect) during a certain period of time prior to and following the award of the Contract by the City Council. The term "Contractor" includes proprietors of proprietorships, partners or joint venturers having an equity interest of 10 percent or more for the partnership or joint venture, and officers, directors and holders of 10 percent or more of the outstanding shares of corporations. Submission of a statement disclosing the names and business addresses of each of those persons is required with each Bid/Proposal for a City Contract. See Chapter 18 of the City of Houston Code of Ordinances for further information.

This list is submitted under the provisions of Section 18-36(b) of the City of Houston Code of Ordinances in connection with the attached Bid/Proposal of:

Firm or Company Name: _____
Firm or Company Address: _____
_____

The firm/company is organized as indicated below. Check one as applicable and attach additional pages if needed to supply the required names and addresses.

[ ] SOLE PROPRIETOR

Name _____ _____
Proprietor Address

[ ] A PARTNERSHIP

LIST EACH PARTNER HAVING EQUITY INTEREST OF 10% OR MORE OF PARTNERSHIP (IF NONE STATE "NONE")

Name _____ _____
Partner Address

Name _____ _____
Partner Address

[ ] A CORPORATION

LIST ALL DIRECTORS OF THE CORPORATION (IF NONE STATE "NONE")

Name _____ _____
Director Address

Name _____ _____
Director Address

Name _____ _____
Director Address

LIST ALL OFFICERS OF THE CORPORATION (IF NONE STATE "NONE")

Name _____ _____
Officer Address

Name _____ _____
Officer Address

Name _____ _____
Officer Address

LIST ALL INDIVIDUALS OWNING 10% OR MORE OF OUTSTANDING SHARES OF STOCK OF THE CORPORATION (IF NONE STATE "NONE")

Name _____ _____
Owner Address

Name _____ _____
Owner Address

Name _____ _____
Owner Address

I certify that I am duly authorized to submit this list on behalf of the firm, that I am associated with the firm in the capacity noted below, and that I have knowledge of the accuracy of the information provided herein.

_____
Signature

_____
Printed Name

_____
Title

Note: This list constitutes a government record as defined by § 37.01 of the Texas Penal Code.

END OF DOCUMENT

Document 00453

# BIDDER'S STATEMENT OF RESIDENCY

The City may not award a contract for general construction, services, or purchases to a Nonresident Bidder unless Nonresident's Bid is lower than the lowest Bid submitted by a responsible Texas Resident Bidder by the same amount that a Texas Resident bidder would be required to underbid the Nonresident Bidder to obtain a comparable contract in the state in which Nonresident's principle place of business is located.

1. This certifies that the Bidder, _____, is a State of Texas Resident Bidder as defined in TEX. GOVT. CODE ANN. § 2252.001(4) (Vernon 1994).

   _____ _____
   Signature Title

   "Texas Resident Bidder" means a bidder whose principal place of business is in this State, and includes a Contractor whose ultimate parent company or majority owner has its principal place of business in this State. *When bidder cannot sign 1, above, proceed to 2.*

2. a. _____ is a resident of _____ and is a Nonresident Bidder as defined in TEX. GOVT. CODE ANN. § 2252.001(3) (Vernon 1994).

   _____ _____
   Signature Title

   "Nonresident Bidder" means a bidder whose principal place of business is not in this State, but excludes a contractor whose ultimate parent company or majority owner has its principal place of business in this State.

   b. The State of _____ _____ have a state statute giving
   Bidder's resident state Does or Does Not
   preference to resident bidders.

   _____ _____
   Signature Title

   *If the answer to 2.b is that your state does have a statute giving preference to resident bidders, then you must provide a copy and proceed to 3.*

3. A copy of the State of _____ statute is attached.

   _____ _____
   Signature Title

   _____
   Date

END OF DOCUMENT

Document 00454

AFFIDAVIT OF NON-INTEREST

**BEFORE ME**, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared _____, who
Affiant

being by me duly sworn on his oath stated that he is _____, of
Title

_____,
Name of Firm

the firm named and referred to and in the foregoing; and that he knows of no officer, agent, or employee of the City of Houston being in any manner interested either directly or indirectly in such Contract.

_____
Affiant's Signature

SWORN AND SUBSCRIBED before me on _____.
Date

_____
Notary Public in and for the State of TEXAS

_____
Print or type name

My Commission Expires: _____
Expiration Date

END OF DOCUMENT

## Document 00455

# AFFIDAVIT OF OWNERSHIP OR CONTROL

**ORIG. DEPT.:** DEPARTMENT OF PUBLIC WORKS AND ENGINEERING **FILE/I.D. NO.:** N-320610-B125-4

**INSTRUCTION: ENTITIES USING AN ASSUMED NAME SHOULD DISCLOSE SUCH FACT TO AVOID REJECTION OF THE AFFIDAVIT. THE FOLLOWING FORMAT IS RECOMMENDED: CORPORATE/LEGAL NAME DBA ASSUMED NAME.**

**STATE OF** _____ §
§ **AFFIDAVIT OF OWNERSHIP OR CONTROL**
**COUNTY OF** _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ [*FULL NAME*] (hereafter "Affiant"), _____ [*STATE TITLE/CAPACITY WITH CONTRACTING ENTITY*] of _____ [*CONTRACTING ENTITY'S CORPORATE/LEGAL NAME*] ("Contracting Entity"), who being by me duly sworn on oath stated as follows:

**1.** Affiant is authorized to give this affidavit and has personal knowledge of the facts and matters herein stated.

**2.** Contracting Entity seeks to do business with the City in connection with _____ [*DESCRIBE PROJECT OR MATTER*] which is expected to be in an amount that exceeds $50,000.

**3.** The following information is submitted in connection with the proposal, submission or bid of Contracting Entity in connection with the above described project or matter.

**4.** Contracting Entity is organized as a business entity as noted below (check box as applicable).

**FOR PROFIT ENTITY:**

[ ] SOLE PROPRIETORSHIP
[ ] CORPORATION
[ ] PARTNERSHIP
[ ] LIMITED PARTNERSHIP
[ ] JOINT VENTURE
[ ] LIMITED LIABILITY COMPANY
[ ] OTHER (Specify type in space below)

**NON-PROFIT ENTITY:**

[ ] NON-PROFIT CORPORATION
[ ] UNINCORPORATED ASSOCIATION

_____

_____

_____

**5.** The information shown below is true and correct for the Contracting Entity and all owners of 5% or more of the Contracting Entity and, where the Contracting Entity is a non-profit entity, the required information has been shown for each officer, *i.e.*, president, vice-president, secretary, treasurer, etc. ***[NOTE: IN ALL CASES, USE FULL NAMES, LOCAL BUSINESS AND RESIDENCE ADDRESSES AND TELEPHONE NUMBERS. DO NOT USE POST OFFICE BOXES FOR ANY ADDRESS. INCLUSION OF E-MAIL ADDRESSES IS OPTIONAL, BUT RECOMMENDED. ATTACH ADDITIONAL SHEETS AS NEEDED.]***

**Contracting Entity**

Name: _____

Business Address *[NO./STREET]* _____

*[CITY/STATE/ZIP CODE]* _____

Telephone Number (_____)_____

Email Address *[OPTIONAL]* _____

Residence Address *[NO./STREET]* _____

*[CITY/STATE/ZIP CODE]* _____

Telephone Number (_____)_____

Email Address *[OPTIONAL]* _____

**5% Owner(s) or More** (IF NONE, STATE "NONE.")

Name: _____

Business Address *[NO./STREET]* _____

*[CITY/STATE/ZIP CODE]* _____

Telephone Number (_____)_____

Email Address *[OPTIONAL]* _____

Residence Address *[NO./STREET]* _____

*[CITY/STATE/ZIP CODE]* _____

Telephone Number (_____)_____

Email Address *[OPTIONAL]* _____

**6. *Optional Information***

Contracting Entity and/or _____ [***NAME OF OWNER OR NON-PROFIT OFFICER***] is actively protesting, challenging or appealing the accuracy and/or amount of taxes levied against _____ [***CONTRACTING ENTITY, OWNER OR NON-PROFIT OFFICER***] as follows:

Name of Debtor: _____

Tax Account Nos. _____

Case or File Nos. _____

Attorney/Agent Name _____

Attorney/Agent Phone No. (_____)_____

Tax Years _____

Status of Appeal *[**DESCRIBE**]* _____

_____

_____

_____

Affiant certifies that he or she is duly authorized to submit the above information on behalf of the Contracting Entity, that Affiant is associated with the Contracting Entity in the capacity noted above and has personal knowledge of the accuracy of the information provided herein, and that the information provided herein is true and correct to the best of Affiant's knowledge and belief.

_____
Affiant

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

(Seal)

_____
Notary Public

**NOTE:**
This affidavit constitutes a **government record** as defined by Section 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in Section 37.10 of the Texas Penal Code. Attach additional pages if needed to supply the required names and addresses.

Document 00456

# BIDDER'S CERTIFICATION OF COMPLIANCE WITH BUY AMERICAN PROGRAM (AVIATION SAFETY AND CAPACITY EXPANSION ACT OF 1990)

By submitting a bid, except for those items listed by Bidder below or on additional copies of this page, attached to this page, Bidder certifies that steel and each manufactured product, is produced in the United States (as defined in the clause Buy American - Steel and Manufactured Products for Construction Contracts) and that components of unknown origin are considered to have been produced or manufactured outside the United States. In case of conflicts with corresponding provisions of other Bidding Documents, Buy American Program provisions govern.

Bidders may obtain from the City a list of products excepted from this provision. Use additional copies of this page as required.

| PRODUCT | COUNTRY OF ORIGIN |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

The above information is true and complete to the best of my knowledge and belief.

_____
(Printed or typed Name of Signatory)

_____ _____
Signature Date

*Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.*

END OF DOCUMENT

Document 00457

Conflict of Interest Questionnaire

**********

Print out latest version of CIQ form from website listed below:

**********

Local Government Code Chapter 176 requires Bidders with the City of Houston ("City") to file a Conflict of Interest Questionnaire with the City Secretary of the City of Houston.

The Conflict of Interest Questionnaire is available for downloading on the Texas Ethics Commission's website at: http://www.ethics.state.tx.us/forms/CIQ.pdf. The completed Conflict of Interest Questionnaire will be posted on the City Secretary's website. Also you will find a list of the City Local Government Officers on the City Secretary's website.

For your convenience the CIQ form is attached as part of this document. Although the City has provided this document for the Bidders convenience, it is the Bidders responsibility to submit the latest version of the CIQ form as promulgated by the Texas Ethics Commission.

The Failure of any Bidder to comply with this law is a Class C misdemeanor.

END OF DOCUMENT

Document 00458

# BIDDER'S CERTIFICATION REGARDING FOREIGN TRADE RESTRICTIONS (49 CFR PART 30)

The undersigned certifies that Contractor (a) is not owned or controlled by one or more citizens or nationals of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade representative (USTR); (b) has not knowingly entered into any contract or subcontract for this project with a contractor that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list; (c) has not procured any product nor subcontracted for the supply of any product for use in the Work that is produced in a foreign country on said list.

*Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If Contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use in the Work, the Federal Aviation Administration may direct, through the sponsor, cancellation of the Contract at no cost to the Government.*

Further, Contractor agrees that, if awarded a contract, Contractor will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. Contractor may rely upon the certification of a prospective subcontractor unless Contractor has knowledge that the certification is erroneous. Contractor shall provide immediate written notice to the City if Contractor learns that its certification or that of a Subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. Subcontractor agrees to provide immediate written notice to Contractor, if at any time it learns that Subcontractor certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that Contractor or Subcontractors knowingly rendered an erroneous certification, the Federal Aviation Administration may direct, through the City, cancellation of the Contract or subcontract for default at no cost to the City.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, certification required by this provision. The knowledge and information of Contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

*This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.*

Certification- The above information is true and complete to the best of my knowledge and belief.

_____
(Printed or typed Name of Signatory)

_____ _____
Signature Date

*Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.*

END OF DOCUMENT

Document 00459

# CONTRACTOR'S STATEMENT REGARDING PREVIOUS CONTRACTS SUBJECT TO EQUAL EMPLOYMENT OPPORTUNITY

*Section 60-1.7(b) of the Regulations of the Secretary of Labor requires each bidder or prospective prime contractor and proposed subcontractor, where appropriate, to state in the bid or at the outset of negotiations for the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and if so, whether it has filed with the Joint Reporting Committee, the Director, an agency, or the former President's Committee on Equal Employment Opportunity all reports due under the applicable filing requirements. In any case in which a bidder or prospective prime contractor or proposed subcontractor which participated in a previous contract subject to Executive Order 10925, 11114. or 11246 has not filed a report due under the applicable filing documents, no contract or subcontract shall be awarded unless such contractor submits a report covering the delinquent period or such other period specified by the FAA or the Director, OFCCP.*

Contractor has __ has not __ participated in a previous contract subject to the equal opportunity clause prescribed by Executive Order 10925, or Executive Order 11114, or Executive Order 11246.

Contractor has __ has not __ submitted all compliance reports in connection with any such contract due under the applicable filing requirements; and that representations indicating submission of required compliance reports signed by proposed subcontractors will be obtained prior to award of subcontracts.

If Contractor has participated in a previous contract subject to the equal opportunity clause and has not submitted compliance reports due under applicable filing requirements, Contractor (Proposer) shall submit a compliance report on Standard Form 100, "Employee Information Report EEO-1" prior to the award of the Contract.

*Standard Form 100 is normally furnished to contractors annually, based on a mailing list currently maintained by the Joint Reporting Committee. In the event Contractor has not received the form, Contractor may obtain it by writing to the following address:*

*Joint Reporting Committee*
*1800 G Street*
*Washington, DC 20506*

_____
(Printed or typed Name of Signatory)

_____ _____
Signature Date

_____
Title

_____
Contractor's Firm Name

*NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.*

END OF DOCUMENT

**Document 00460**
**(POP -1)**
**City of Houston**
**Pay or Play Program**
**Acknowledgement Form**

It has been determined that the project currently open for bidding meets the criteria of the City of Houston Pay or Play program. This form acknowledges your awareness of the Pay or Play program which is authorized by Ordinance 2007-534. Your signature below affirms that you will comply with the requirements of the program if you are the successful bidder/proposer, and ensure the same on behalf of subcontracts subject to the Pay or Play Program.

I declare under penalty of perjury under the laws of the State of Texas that if awarded this contract which meets the criteria for the City of Houston's Pay or Play Program, I will comply with all requirements of the Pay or Play Program in accordance with Executive Order 1-7.

***Fill out all information below and submit this form with your bid/proposal packet.**

_____
Solicitation Number

_____ _____
Signature Date

_____ _____
Print Name City Vendor ID

_____ _____
Company Name Phone Number

_____
Email Address

**Note: For more information contact your POP Liaison or the POP Contract Administrator. All contact information can be found on www.houstontx.gov →Departments→Office of Business Opportunity→Pay or Play.**

Document 00470

# BIDDER'S MWSBE PARTICIPATION PLAN

The Bidder or Proposer shall submit this completed form with the bid, to demonstrate the Bidder/Proposer's plan to meet the contract-specific MWSBE goal ("contract goal"). If the Bidder or Proposer cannot meet the contract goal, the Bidder/Proposer has the burden to demonstrate "Good Faith Efforts", which shall include correctly and accurately preparing and submitting this form, a Record of Good Faith Efforts (Document 00471), and a Request for Deviation from the Goal (Document 00472), the documentation evidencing their "Good Faith Efforts", as required by the City of Houston's Good Faith Efforts Policy (Document 00808). The City will review the Participation Plan and Good Faith Efforts at the time of bid opening. Visit http://www.houstontx.gov/obo for more information.

| Contract Goal | MBEGoal % | WBEGoal % |
|---|---|---|
| | 9% | 6% |

| Bidder's Participation Plan Percentage | SBE | MBE | WBE | Total |
|---|---|---|---|---|
| | | | | |

| NAICS Code (6 digit) | Description of Work (Plan Sheet #, Unit Price #, Scope of Work #, as applicable) | % of Total Bid Price (2 decimal places) | Cert. Type for Goal MBE, WBE, SBE) | Certified Firm Name<br>Firm Address<br>Contact Name<br>Phone No. and E-Mail (if available) |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Signature for Company: _____ Date: _____
Print Name: _____ Phone: _____
Bidder: _____
(Print or type full name of business entity, such as corporation, LLC, etc)

I understand that supplying inaccurate information may violate Texas Penal Code Section 37.10 and lead to City sanctions.

DOCUMENT 00470

## CONTINUATION PAGE

| NAICS Code (6 digit) | Description of Work (Plan Sheet #, Unit Price #, Scope of Work #, as applicable) | % of Total Bid Price (2 decimal places) | Cert. Type for Goal MBE, WBE, SBE) | Certified Firm Name Firm Address Contact Name Phone No. and E-Mail (if available) |
|---|---|---|---|---|
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| | | | | |
| | | | | |

Signature for Company: _____ Date: _____
Print Name: _____ Phone: _____
Bidder: _____
(Print or type full name of business entity, such as corporation, LLC, etc)
I understand that supplying inaccurate information may violate Texas Penal Code Section 37.10 and lead to City sanctions.

Document 00471

## PRE-BID GOOD FAITH EFFORTS

**Bidder or Proposer Name:** _____ **Project Name**_____

A Bidder or Proposer that may be unable to complete or follow a Participation Plan (Document CCD-00470) to meet the Contract Goal in the Supplemental Conditions (Document 00800), must submit this completed form as well as a Goal Deviation Request Form (Document 00472), and any other documentation of "Good Faith Efforts" with the bid (see Document 00808). The Bidder or Prime Contractor has the burden to demonstrate "Good Faith Efforts" to meet the MWSBE goal, which includes correctly and accurately preparing and submitting this form and other efforts described in the City's Good Faith Efforts Policy (Document 00808). The Office of Business Opportunity will review Good Faith Efforts and Participation Plan after selection of an apparent low bidder.

*UNLESS THE BIDDER'S/PROPOSER'S PARTICIPATION PLAN MEETS THE CONTRACT GOAL, FAILURE TO SUBMIT THIS FORM MAY RESULT IN THE BID BEING FOUND NON-RESPONSIVE.*

| NAICS Code | Plan Item No. | MWSBE Type for Goal | Certified Firm Name Address, Phone No. and E-Mail | Certified Firm Contact Person | Method of Contact | Prime Contact Date | Certified Firm Response | Results of Contact (why suitable or not suitable for work) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |

Authorized Signature: _____ Date: _____ Phone: _____

Print Name: _____ Email Address: _____

CONTINUATION PAGE

| NAICS Code | Plan Item No. | MWSBE Type for Goal | Certified Firm Name Address, Phone No. and E-Mail | Certified Firm Contact Person | Method of Contact | Prime Contact Date | Certified Firm Response | Results of Contact (why suitable or not suitable for work) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |

Authorized Signature: _____ Date: _____ Phone: _____

Print Name: _____ Email Address: _____

Document 00472

# BIDDER'S MWSBE GOAL DEVIATION REQUEST

**Bidder or Proposer Name:**_____

**Project Name & Bid/Contract #:**_____

| | MBE | WBE | SBE | Total |
|---|---|---|---|---|
| **Department Approved MWSBE Goals** | % | % | % | % |

| | MBE | WBE | SBE | Total |
|---|---|---|---|---|
| **Bidder's Proposed MWSBE Goals** | % | % | % | % |

**Justification:** Please provide the reason the Bidder is unable to meet the Contract Goal in Form 00800.

_____

_____

_____

**Good Faith Efforts:** Please list any efforts not listed in the Bidder's Good Faith Effort Report (Form 00471).

_____

_____

_____

_____

Date:_____ Bidder: _____

Email:_____ By: _____

Phone Number: _____ Title: _____

**FOR OFFICIAL USE ONLY**: Approved ☐ Not Approved ☐

OBO Representative Date:_____

_____ Title: _____

Document 00495

# POST-BID PROCEDURES

## 1.0 DOCUMENT ADDRESSES

A. Notice of Intent to Award

B. Monitoring Authority/Contracting Department

C. Requirements of Bidder

D. Failure of Bidder to comply with requirements

E. Notice to Proceed

## 2.0 NOTICE OF INTENT TO AWARD

A. The City will provide written Notice of Intent to Award to Low Bidder.

## 3.0 DEFINITIONS

A. The "Monitoring Authority" or "OBO" for this Project is:

Director, Office of Business Opportunity Division
**City of Houston**
611 Walker Street, 7th Floor
**Houston, Texas 77002**

B. The "Contracting Department" for this Project is:
Director, Department of DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
City of Houston
611 Walker Street
Houston, Texas 77002
ATTN: **Sam Kanu, P.E.,**

## 4.0 REQUIREMENTS OF BIDDER

A. Within10 days of receipt of Notice of Intent to Award, Low Bidder shall execute and deliver to Sam Kanu, P.E., Project Manager and Monitoring Authority, for the City's approval, documents indicated by an "X" below:
[ ] Document 00570 – Revised MWSBE Participation Plan *(Do not submit if OBO Director approved Bidder's Plan – Document 00470)*

[ X ] Executed Subcontract(s), Letter(s) of Intent, or documentation of good faith efforts to meet the MWSBE goals

B. Within 10 days of receipt of Notice of Intent to Award, Low Bidder shall execute and deliver to Sam Kanu, P.E., Project Manager for the City's approval, documents indicated by an "X" below:

[ ] Document 00500 - Form of Business
[ X ] Document 00501 - Resolution of Contractor
[ X ] Document 00520 - Agreement
[ X ] Document 00600 - List of Proposed Subcontractors and Suppliers
[ X ] Document 00601 - Drug Policy Compliance Agreement
[ X ] Document 00602 - Contractor's Drug-free Workplace Policy *(Contractor creates this document.)*
[ X ] Document 00604 - History of OSHA Actions and List of On-the-job Injuries
[ X ] Document 00605 - List of Safety Impact Positions *(Contractor completes this list. Do not submit if submitting Document 00606.)*
[ ] Document 00606 - Contractor's Certification of No Safety Impact Positions *(Do not submit if submitting Document 00605.)*
[ ] Document 00607 - Certification Regarding Debarment, Suspension, and Other Responsibility Matters
[ ] Document 00608 - Contractor's Certification Regarding Non-segregated Facilities for Project Funded by AIP Grant
[ X ] Document 00610 - Performance Bond
[ X ] Document 00611 - Statutory Payment Bond
[ X ] Document 00612 - One-year Maintenance Bond
[ X ] Document 00613 - One-year Surface Correction Bond
[ X ] Document 00620 - Affidavit of Insurance *(with Certificate of Insurance attached)*
[ X ] Document 00622 - Name and Qualifications of Proposed Superintendent *(Contractor creates this document.)*
[ ] Document 00623 - Contractor's Act of Assurance (SRF Form ED-103)
[ X ] Document 00624 - Affidavit of Compliance with S/WMBE Program
[ ] Document 00625 - SRF Participation Summary
[ ] Document 00626 - SRF Affirmative Steps Solicitation Report
[ ] Document 00627 - SRF Prime Contractor Affirmative Steps Certification and Goals
[ ] Document 00629 - Affidavit for FAA Form 7460-1
[ X ] Document 00630 - Certification of Compliance with Pay or Play Program
[ X ] Document 00631 - City of Houston Pay or Play Program – List of Subcontractors
[ ] Document 00809 – CDBG Requirements for Federally Funded Projects

**C.** Within 10 days of receipt of Notice of Intent to Award, Low Bidder shall execute the following forms and deliver them directly to the Monitoring Authority.

1. Original forms contained in Document 00805 – Equal Employment Opportunity Program Requirements:
   *[ X ] Pages 00805-3 to 00805-5, Certification by Bidder Regarding Equal*

*Employment Opportunity*

[ X ] *Page 00805-6, Total Work Force Composition of the Company, or copy of latest EEO-1 form (required only if Contractor has a work force of 50 or more people and the Original Contract Price is $50,000 or more)*

[ X ] *Page 00805-7, Equal Employment Opportunity Compliance Program*

[ X ] *Page 00805-26, Certification by Proposed Subcontractor Regarding Equal Employment Opportunity*

[ X ] *Page 00805-29, Certification by Proposed Material Supplier, Lessor, and Professional Service Providers Regarding Equal Employment Opportunity*

2. Original completed form Document 00633 - Certification by Proposed Material Suppliers, Lessors, and Professional Service Providers Regarding Equal Employment Opportunity, for each proposed material supplier and equipment supplier.

3. Original forms contained in Document 00820 – Wage Scale for Engineering Construction.

[ X ] *Certificate from Contractor Appointing Officer or Employee to Supervise Payment of Employees*

[ ] *Certificate from SubContractor Appointing Officer or Employee to Supervise Payment of Employees*

[ ] Document 00812, Exhibit "A" – Certificate from Contractor Appointing Officer or Employee to Supervise Payment of Employees

D. Designations of Subcontractors and Suppliers, who have been selected by Bidder in Document 00600 - List of Proposed Subcontractors and Suppliers, and accepted by the City, may be changed only with prior notice and acceptance by Project Manager as provided in Conditions of the Contract. For each Product Supplier subsequently added or substituted, provide an original completed form, Document 00633 - Certification by Proposed Material Suppliers, Lessors, and Professional Service Providers Regarding Equal Employment Opportunity, directly to the Monitoring Authority.

E. On Bidder's written request, Sam Kanu, P.E., Project Manager may grant an extension of time, not to exceed 5 days, to furnish documents specified in Paragraphs 4.0.A and 4.0.B. If Bidder is required to resubmit documents specified in Paragraph 4.0.A or 4.0.B, Bidder shall do so within time limits provided in the request for resubmission.

F. Designations of Subcontractors and Suppliers, who have been selected by Bidder in its Participation Plan, and accepted by the City, may be changed only with prior notice and acceptance by the Monitoring Authority as provided in Document 00808 – Bidder/Contractor Requirements for the City of Houston Minority, Women, and Small Business Enterprise (MWSBE), and Persons with Disabilities Business Enterprise (PDBE).

5.0 FAILURE OF BIDDER TO COMPLY WITH REQUIREMENTS

A. Should Bidder, on receipt of Notice of Intent to Award, fail to comply with requirements of this Document 00495 within stated time, the City may declare award in default and require forfeiture of the Security Deposit.

B. After the City's written notice of default to Low Bidder, the City may award the Contract to Bidder whose offer is the next lowest bid, and Security Deposit of Bidder in default shall be forfeited to the City in accordance with provisions of Document 00200 - Instructions to Bidders.

6.0 NOTICE TO PROCEED

A. Upon the City's execution of the Agreement and delivery to Contractor, City Engineer will give Document 00551 - Notice to Proceed to Contractor, which establishes Date of Commencement of the Work.

**END OF DOCUMENT**

Document 00500

FORM OF BUSINESS

Please mark the box describing your firm's form of business, fill in the requested information, and include the relevant attachments.

[ ] **Corporation**
Corporate Name: _____
State of Incorporation: _____
Mailing Address: _____, _____
Type of Corporation: _____

Certificate of Assumed Name, if operating under a name different than that on the corporate charter (the Certificate must have been issued within the past 10 years to be valid)

*Certificate of Good Standing

*Certificate of Existence (if non-Texas corporation, Certificate of Authority)

[ ] **Partnership/Joint Venture**
Partnership/Joint Venture Name: _____
Mailing Address: _____, _____
Type of Partnership/Joint Venture: _____

Copy of the Partnership or Joint Venture Agreement, **or**
Affidavit with the name of the partnership or joint venture, the names of the individual partners or participants in the joint venture, and a statement that the partnership or joint venture is in existence

Certificate of Assumed Name, (the Certificate must have been issued within the past 10 years to be valid)

If firm is a limited partnership, the Certificate of Limited Partnership

If any partner or joint venturer is a corporation, the above information relating to corporation must be included as to each sum partner or joint venturer.

[ ] **Sole Proprietorship**

Name: _____
Mailing Address: _____

Certificate of Assumed Name, if operating under a name different than that of the sole proprietor (the Certificate must have been issued within the past 10 years to be valid)

** Must be furnished upon request of the Director and must be less than 90 days old.*

END OF DOCUMENT

Document 00501

## RESOLUTION OF CONTRACTOR

_____ ("Contractor"),
(Name of Contractor, e.g., "Biz. Inc.", "Biz LLP")

is a _____,
(Type of Organization, e.g.: Corporation, Limited Partnership, Limited Liability Partnership, Limited Liability Company, etc.)

which is bound by acts of _____,
(Name and Form of Governing Entity, e.g., "Biz Inc. Board of Directors", "Bill Smith, GP", etc.)

("Governing Entity").

On the _____ day of _____, 20__, the Governing Entity resolved, in accordance with all documents, rules, and laws applicable to the Contractor, that

_____, is authorized to act as the
(Contractor's Representative)

Contractor's Representative in all business transactions (initial one) ____ conducted in the State of Texas OR ____ related to this Contract; and

The Governing Entity warrants that the above resolution (a) was entered into without dissent or reservation by the Governing Entity, (b) has not been rescinded or amended, and (c) is now in full force and effect; and

In authentication of the adoption of this resolution, I subscribe my name on this day of _____, 20___.

_____ _____
(Authorized Signature for Governing Entity) (Print or Type Name and Title of Authorized Signatory)

**SWORN AND SUBSCRIBED** before me on _____
Date

_____
Notary Public in and for the State of Texas

My Commission Expires: _____ _____
Expiration Date Print or Type Name of Notary Public

Document 00520

# AGREEMENT

**Project:** Safe Sidewalk Program (Package III)

**Project Location:** Various(Key Map No. Various)

**Project No:** WBS No. N-320610-B125-4

**The City:** THE CITY OF HOUSTON, 900 Bagby Street, Houston, Texas 77002 (the "City")

and

**Contractor:** _____

(Address for Written Notice) _____

_____

**Fax Number:** _____ **Phone Number:** _____

**City Engineer, with respect to Sections 4.3 thru 4.5 of the General Conditions, is:**

J. Timothy Lincoln, P.E. (or his successor)

P. O. Box 1562, Houston, Texas 77251-1562 (Address for Written Notice)

**City Engineer, with respect to all other terms of the General Conditions, is:**

Joseph T. Myers, P.E. (or his successor)

**Fax Number:** (832) 395-2410

**THE CITY AND CONTRACTOR AGREE AS FOLLOWS:**

## ARTICLE 1
## THE WORK OF THE CONTRACT

1.1 Contractor shall perform the Work in accordance with the Contract.

## ARTICLE 2
## CONTRACT TIME

2.1 Contractor shall achieve Date of Substantial Completion within **90** days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

2.2 The Parties recognize that time is of the essence for this Agreement and that the City will suffer financial loss if the Work is not completed within the Contract Time. Parties also recognize delays, expense, and difficulties involved in proving in a legal or arbitration proceeding actual loss suffered by the City if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Parties agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay the City the amount stipulated in Document 00800 – Supplementary Conditions, for each day beyond Contract Time.

## ARTICLE 3
## CONTRACT PRICE

3.1 Subject to terms of the Contract, the City will pay Contractor in current funds for Contractor's performance of the Contract, Contract Price of $ which includes Alternates, if any, accepted below.

3.2 The City accepts Alternates as follows:

**********

*Delete or add lines below to indicate all Alternates that were included in Request for competative sealed proposals. Remove brackets and instructions when done. Change color of remaining text to black.*

**********

Alternate No. 1 [*Accepted or Not Accepted*]
Alternate No. 2 [*Accepted or Not Accepted*]
Alternate No. 3 [*Accepted or Not Accepted*]
Alternate No. 4 [*Accepted or Not Accepted*]

## ARTICLE 4
## PAYMENTS

4.1 The City will make progress payments to Contractor as provided below and in Conditions of the Contract.

4.2 The Period covered by each progress payment is one calendar month ending on the [___] 15th or [___] last day of the month.

4.3 The City will issue Certificates for Payment and will make progress payments on the basis of such Certificates as provided in Conditions of the Contract.

4.4 Final payment, constituting entire unpaid balance of Contract Price, will be made by the City to Contractor as provided in Conditions of the Contract.

## ARTICLE 5
## CONTRACTOR REPRESENTATIONS

5.1 Contractor represents:

5.1.1 Contractor has examined and carefully studied Contract documents and other related data identified in Request For or Competitive Sealed Proposals or Competitive Sealed Bids.

5.1.2 Contractor has visited the site and become familiar with and is satisfied as to general, local, and site conditions that may affect cost, progress, and performance of the Work.

5.1.3 Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the Work.

5.1.4 Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in Contract

documents and (2) reports and drawings of a hazardous environmental condition, if any, at the site which has been identified in Contract documents.

5.1.5 Contractor has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including applying specific means, methods, techniques, sequences, and procedures of construction, if any, expressly required by the Contract to be employed by Contractor, and safety precautions and programs incident thereto

5.1.6 Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for performance of the Work at Contract Price, within Contract Time, and in accordance with the Contract.

5.1.7 Contractor is aware of general nature of work to be performed by the City and others at the site that relates to the Work as indicated in Contract documents.

5.1.8 Contractor has correlated information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the Contract, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract.

5.1.9 Contractor has given City Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract, and written resolution thereof by City Engineer is acceptable to Contractor.

5.1.10 Contract documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## ARTICLE 6
## MISCELLANEOUS PROVISIONS

6.1 The Contract may be terminated by either Party as provided in Conditions of the Contract.

6.2 The Work may be suspended by the City as provided in Conditions of the Contract.

## ARTICLE 7
## ENUMERATION OF CONTRACT DOCUMENTS

7.1 The following documents are incorporated into this Agreement:

7.1.1 Document 00700 - General Conditions.

7.1.2 Document 00800 - Supplementary Conditions.

7.1.3 Division 01 - General Requirements.

7.1.4 Divisions 02 through 16 of Specifications.

7.1.5 Drawings listed in Document 00015 - List of Drawings. Drawing No. _____and bound separately.

7.1.6 Addenda [and Riders] which apply to the Contract, are as follows:

Addendum No. 1, dated None

Addendum No. 2, dated None

Addendum No. 3, dated None

Rider No. [___], dated None

7.1.7 Other documents:

| | Document No. | Title |
|---|---|---|
| [ X ] | 00410B | Bid Form – Part B |
| [ X ] | 00470 | Standard Pre-Bid Participation Plan Document |
| [ ] | 00471 | Pre-Bid Good Faith Efforts Report |
| [ ] | 00472 | Goal Deviation Request |
| [ ] | 00500 | Form of Business |
| [ X ] | 00501 | Resolution of Contractor (if a corporation) |
| [ ] | 00570 | Amended S/MWBE Participation Plan |
| [ ] | 00571 | Contractor's Good Faith Efforts Report |
| [ ] | 00572 | Plan Deviation Request |
| [ ] | 00608 | Contractor's Certification Regarding Non-Segregated Facilities for Project Funded by AIP Grant |
| [ X ] | 00610 | Performance Bond |
| [ X ] | 00611 | Statutory Payment Bond |
| [ X ] | 00612 | One-year Maintenance Bond |
| [ X ] | 00613 | One-year Surface Correction Bond |
| [ X ] | 00620 | Affidavit of Insurance (with the Certificate of Insurance attached) |
| [ ] | 00623 | Contractor's Act of Assurance (SRF Form ED-103) |
| [ X ] | 00624 | Affidavit of Compliance with Affirmative Action Program |
| [ ] | 00628 | Affidavit of Compliance with Disadvantaged Business Enterprise (DBE) Program for Project Funded By AIP Grant |
| [ X ] | 00630 | (POP-2) Certification of Compliance with Pay or Play Program |
| [ X ] | 00631 | (POP-3) City of Houston Pay or Play Program – List of Subcontractors |
| [ X ] | 00800 | Supplementary Conditions for Project CIP or AIP Funded |
| [ ] | 00801 | Supplementary Conditions for Project AIP Funded |
| [ ] | 00802 | SRF Supplementary Conditions |
| [ X ] | 00805 | Equal Employment Opportunity Program Requirements |
| [ ] | 00806 | EPA DBE and Wage Rate Requirements (SRF only) |
| [ ] | 00807 | Bidder/Contractor Requirements for DBE Program |
| [ X ] | 00808 | Minority and Women-owned Business Enterprise (MWBE) & Persons with Disabilities Business Enterprise (PDBE) Program |
| [ ] | 00810 | Federal Wage Rate - Highway |
| [ ] | 00811 | Federal Wage Rate - Building |
| [ ] | 00812 | Federal Wage Rate - Heavy |
| [ X ] | 00820 | Wage Rate for Engineering Construction |
| [ ] | 00821 | Wage Rate for Building Construction |
| [ ] | 00830 | Trench Safety Geotechnical Information |
| [ X ] | 00840 | Pay or Play Program |
| [ ] | 00912 | Rider |

## ARTICLE 8
## SIGNATURES

8.1 This Agreement is executed in two original copies and is effective as of the date of countersignature by City Controller.

**CONTRACTOR:**

By: _____

Name: _____

Title: _____

Date: _____

Tax Identification Number: _____

(If Joint Venture)

By: _____

Name: _____

Title: _____

Date: _____

Tax Identification Number: _____

**CITY OF HOUSTON, TEXAS**

APPROVED:

By: _____
Director,
Department of Public Works and Engineering

SIGNED:

By: _____
Mayor

COUNTERSIGNED:

By: _____
City Controller

Date Countersigned:

_____

ATTEST/SEAL:

By: _____
City Secretary

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

_____
Legal Assistant

_____
Date

END OF DOCUMENT

Document 00570

## CONTRACTOR'S REVISED MWSBE PARTICIPATION PLAN

As soon as the Contractor becomes aware that the Contractor may not abide by the most current approved Plan, the Contractor shall submit this completed form with a Record of Post-Bid Good Faith Efforts (Document 00571), a Request for Plan Deviation (Document 00572), and any other document evidencing "Good Faith Efforts", as required by the Good Faith Efforts Policy (Document 00808). The City will review this Revised Participation Plan and may approve this Revised Plan if the Contractor has made Good Faith Efforts. For more information, visit http://www.houstontx.gov/obo.

| Original Participation Plan Percentage | MBE | WBE | SBE | Revised Participation Plan Percentage | MBE | WBE | SBE |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| NAICS Code (6 digit) | Description of Work (Plan Sheet #, Unit Price #, Scope of Work #, as applicable) | % of Total Bid Price (2 decimal places) | Cert. Type for Goal (MBE, WBE, SBE) | Certified Firm Name<br>Firm Address<br>Contact Name<br>Phone No. and E-Mail (if available) |
|---|---|---|---|---|
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| | | | | |

Signature for Company: _____* Date: _____
Print Name: _____ Phone: _____

*I understand that supplying inaccurate information may violate Texas Penal Code Section 37.10 and lead to City sanctions.

Document 00570

## CONTINUATION PAGE

| NAICS Code (6 digit) | Plan Item Number (if applicable)/ Description of Work | % of Total Bid Price (2 decimal places) | Cert. Type for Goal (MBE, WBE, SBE) | Certified Firm Name Firm Address Contact Name Phone No. and E-Mail (if available) |
|---|---|---|---|---|
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| | | | | |

Signature for Company: _____* Date: _____
Print Name: _____ Phone: _____

nderstand that supplying inaccurate information may violate Texas Penal Code Section 37.10 and lead to City sanctions.

Document 00571

# RECORD OF POST-AWARD GOOD FAITH EFFORTS

**Contractor Name:** _____ **Project Name:** _____

A Contractor that may be unable to follow an agreed Participation Plan (Document 00470 or 00570) must submit this completed form, a Plan Deviation Request Form (Document 00572), and any other documentation of "Good Faith Efforts" (see Document 00808) that the OBO Representative may require. The Contractor shall submit one completed Document 00571 (Part A) for each Certified Firm that is no longer performing part or all of its work duties under the Approved Plan. The Contractor has the burden to demonstrate "Good Faith Efforts" to meet the MWSBE goal, which includes correctly and accurately preparing and submitting this form and other efforts described in the Good Faith Efforts Policy (Document 00808). The Office of Business Opportunity may review Participation Plan and Good Faith Efforts from time to time and may request that the Contractor submit this form and other information.

*UNLESS THE CONTRACTOR MEETS THE GOALS IN THE AGREED PARTICIPATION PLAN, FAILURE TO SUBMIT THIS FORM MAY RESULT IN A DEFAULT OF THE CONTRACT.*

## PART A (REASON FOR NON-USE OF CERTIFIED FIRM IN AGREED PLAN)

| NAICS Code | Plan Item No. | MWSBE Type for Goal | Certified Firm Name, Address, Phone No. and E-mail | Plan Goal & Actual Use (in % of total) | Method of Contact | Reason for Non-Use (why the Contractor was not able to use the Certified Firm in accordance with the Agreed Plan) |
|---|---|---|---|---|---|---|
| | | | | Plan %: ____ Actual %: ____ | Phone E-mail Fax | |

## PART B (REASON FOR NONUSE OF REPLACEMENT CERTIFIED FIRMS—IF APPLICABLE)

| NAICS Code | Plan Item No. | MWSBE Type for Goal | Certified Firm Name Address, Phone No. and E-Mail | Certified Firm Contact Person | Method of Contact | Prime Contact Date | Certified Firm Response | Results of Contact (why Certified Firm was unsuitable or unusable) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Phone E-mail Fax | | | |
| | | | | | Phone E-mail Fax | | | |

Authorized Signature: _____ Date: _____ Phone: _____

Print Name: _____ Email Address: _____

Document 00571

**PART B CONTINUATION (REASON FOR NONUSE OF REPLACEMENT CERTIFIED FIRMS)**

| NAICS Code | Plan Item No. | MWSBE Type for Goal | Certified Firm Name Address, Phone No. and E-Mail | Certified Firm Contact Person | Method of Contact | Prime Contact Date | Certified Firm Response | Results of Contact (why Certified Firm was unsuitable or unusable) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |
| | | | | | Phone<br>E-mail<br>Fax | | | |

Authorized Signature: _____ Date: _____ Phone: _____

Print Name: _____ Email Address: _____

Document 00572

# CONTRACTOR'S REQUEST FOR PLAN DEVIATION

**Contractor Name:**_____

**Project Name:**_____

| **Approved Participation Plan Percentages** | **MBE** | **WBE** | **SBE** | **Total** |
|---|---|---|---|---|
| | % | % | % | % |

| **Contractor's Requested Participation Plan** | **MBE** | **WBE** | **SBE** | **Total** |
|---|---|---|---|---|
| | % | % | % | % |

**Justification:** Please provide the reason the Contractor is unable to meet the MWSBE goal in the Approved Plan.

_____

_____

_____

**Good Faith Efforts:** Please list any efforts not listed in Contractor's Record of Good Faith Effort (Document 00571).

_____

_____

_____

_____

Please attach additional pages if the space for Justification or Good Faith Efforts is insufficient.

Date:_____ *Contractor:_____

E-mail: _____ *By:_____

Phone Number:_____ Title:_____

*I understand that the approval of this deviation request does not constitute a final decision by OBO that Contractor has used Good Faith Efforts in meeting the Contracting Goal.

**FOR OFFICIAL USE ONLY**: Approved ☐ Not Approved ☐

OBO Representative Date:_____

_____ Title: _____

Document 00600

# LIST OF PROPOSED SUBCONTRACTORS AND SUPPLIERS

PROJECT NAME: Safe Sidewalk Program (Package III)
TOTAL DBE AWARD: $ _____
ORIG. CONTRACT PRICE: $_____ TOTAL MWSBE AWARD: $ _____
PROJECT NO.: WBS No. N-320610-B125-4 TOTAL HUB AWARD: $ _____
DATE OF REPORT: _____ TOTAL PDBE AWARD: $ _____

| **NAICS** (6 digits) | **SUBCONTRACTOR OR SUPPLIER (INCLUDE "MWSBE", "PDBE", "DBE", OR "HUB" DESIGNATION)**[2] | **ADDRESS** | **SCOPE OF WORK**[3] |
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**NOTES:**
1. RETURN FOR ALL PROJECTS AS REQUIRED IN DOCUMENT 00800 – SUPPLEMENTARY CONDITIONS. RETURN WITHIN THE SPECIFIED NUMBER OF DAYS AFTER RECEIPT OF NOTICE OF INTENT TO AWARD
2. DESIGNATE FIRMS CERTIFIED BY THE CITY OFFICE OF BUSINESS OPPORTUNITY ON THIS FORM.
3. DESCRIBE THE WORK TO BE PERFORMED, FOR WHICH THE FIRM IS CERTIFIED, SUCH AS "PAVING", "ELECTRICAL", ETC.
4. **CONTRACTOR SHALL EXECUTE CONTRACTS WITH APPROVED SUBCONTRACTORS AND SUPPLIERS WITHIN 30 DAYS AFTER THE DATE OF THE NOTICE TO PROCEED. COPIES OF CONTRACTS WITH DESIGNNATED FIRMS MUST BE SENT TO THE OFFICE OF BUSINESS OPPORTUNITY.**

SIGNATURE: _____ COMPANY NAME: _____

NAME: _____ TITLE: _____
(Type or Print)

Document 00600

Continuation Page

PROJECT NAME: Safe Sidewalk Program (Package III)
DATE OF REPORT: _____
PROJECT NO.: WBS No. N-320610-B125-4

| NAICS (6 digits) | SUBCONTRACTOR OR SUPPLIER (INCLUDE "MWSBE", "PDBE", "DBE", OR "HUB" DESIGNATION)[2] | ADDRESS | SCOPE OF WORK[3] |
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SIGNATURE: _____ COMPANY NAME: _____

NAME: _____ TITLE: _____
(Type or Print)

END OF DOCUMENT

Document 00601

# DRUG POLICY COMPLIANCE AGREEMENT

I, _____ _____,
Name Title

of _____
Contractor

have authority to bind Contractor with respect to its Bid, Proposal, or performance of any and all contracts it may enter into with the City of Houston; and that by making this Agreement, I affirm that Contractor is aware of and by the time the Contract is awarded will be bound by and agree to designate appropriate safety impact positions for company employee positions, and to comply with the following requirements before the City issues a Notice to Proceed:

1. Develop and implement a written Drug Free Workplace Policy and related drug testing procedures for Contractor that meet the criteria and requirements established by the Mayor's Amended Policy on Drug Detection and Deterrence (Mayor's Drug Policy) and the Mayor's Drug Detection and Deterrence Procedures for Contractors (Executive Order No. 1-31).

2. Obtain a facility to collect urine samples consistent with Health and Human Services (HHS) guidelines and an HHS-certified drug-testing laboratory to perform drug tests.

3. Monitor and keep records of drug tests given and results; and upon request from the City of Houston, provide confirmation of such testing and results.

4. Submit semi-annual Drug Policy Compliance Declarations.

I affirm on behalf of Contractor that full compliance with the Mayor's Drug Policy and Executive Order No. 1-31 is a material condition of the Contract with the City of Houston,

I further acknowledge that falsification, failure to comply with or failure to timely submit declarations or documentation in compliance with the Mayor's Drug Policy or Executive Order No. 1-31 will be considered a breach of the Contract with the City and may result in non-award or termination of the Contract by the City.

_____ _____
Contractor Title

_____ _____
Signature Date

END OF DOCUMENT

Document 00604

# HISTORY OF OSHA ACTIONS AND LIST OF ON-THE-JOB INJURIES

Prior to award of the Contract, Low Bidder will be required to file the following with the City:

1. A history of all OSHA actions, advisories, etc., Contractor has received on all jobs worked in any capacity, prime or subcontractor. The history shall be for the two-year period preceding the Bid Date of the Project.

2. A list of all on-the-job injuries, accidents, and fatalities suffered by any present or former employees of Contractor during the same two-year period.

3. If less than the two-year period, give the date Contractor started doing business.

This information must be submitted to the City within the time period stated in Document 00498 - Notice of Intent to Award. An officer of the company must certify in a notarized statement that the information submitted is true and correct.

END OF DOCUMENT

Document 00605

# LIST OF SAFETY IMPACT POSITIONS

**********

*Contractor is to provide a complete List of Employee Classifications that are considered in a "Safety Impact Position" and the number of employees in each of those classifications.*

**********

| Employee Classification | Number of Employees |
|---|---|
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END OF DOCUMENT

Document 00606

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

**BEFORE ME**, the undersigned authority, on this day personally appeared

_____,
Affiant

who being by me duly sworn on his oath stated that he is _____
Title

of _____
Contractor

and that no employee safety impact positions, as defined in §5.17 of Executive Order No. 1-31, will be involved in performing _____.
Project

Contractor agrees and covenants that it shall immediately notify the City of Houston Director of Personnel if any safety impact positions are established to provide services in performing this City Contract.

_____
Affiant's Signature

SWORN AND SUBSCRIBED before me on this day of _____, 20___.

_____
Notary Public in and for the State of TEXAS

_____
Print or Type Notary Public Name

My Commission Expires: _____
Expiration Date

END OF DOCUMENT

Document 00607

CERTIFICATION REGARDING DEBARMENT,
SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

Contractor certifies to the best of its knowledge and belief that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State, or local department or agency;

2. Have not within a three-year period preceding this proposal 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;

3. Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph 2 of this certification; and

4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Section 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to five years, or both.

Company:

_____
Typed Name & Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

☐ I am unable to certify the above statements. My explanation is attached.

END OF DOCUMENT

Document 00610

PERFORMANCE BOND

**THAT WE**, _____, as Principal, (the "Contractor"), and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston (the "City"), a municipal corporation, in the penal sum of $_____ for the payment of which sum, well and truly to be made to the City, its successors and assigns, Contractor and Surety do bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

**THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:**

**WHEREAS**, the Contractor has on or about this day executed a Contract in writing with the City for _____
_____,
all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

**NOW THEREFORE**, if the said Contractor shall faithfully and strictly perform the Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract documents referred to therein and shall comply strictly with each and every provision of the Contract and with this Bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect. Should the Contractor fail to faithfully and strictly perform the Contract in all its terms, including but not limited to the indemnifications thereunder, the Surety shall be liable for all damages, losses, expenses and liabilities that the City may suffer in consequence thereof, as more fully set forth herein.

It is further understood and agreed that the Surety does hereby relieve the City or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, and the Surety agrees that it shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of the Contractor in all matters pertaining to the Contract. The Surety understands and agrees that the provision in the Contract that the City will retain certain amounts due the Contractor until the expiration of 30 days from the acceptance of the Work is intended for the City's benefit, and the City will have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

It is further expressly agreed by Surety that the City or its representatives are at liberty at any time, without notice to the Surety, to make any change in the Contract documents and in the Work to be done thereunder, as provided in the Contract, and in the terms and conditions thereof, or to make any change in, addition to, or deduction from the Work to be done thereunder; and that such changes, if made, shall not in any way vitiate the obligation in this Bond and undertaking or release the Surety therefrom.

It is further expressly agreed and understood that the Contractor and Surety will fully indemnify and save harmless the City from any liability, loss, cost, expense, or damage arising out of Contractor's performance of the Contract.

If the City gives Surety notice of Contractor's default, Surety shall, within 45 days, take one of the following actions:

1. Arrange for Contractor, with consent of the City, to perform and complete the Contract; or

2. Take over and assume completion of the Contract itself, through its agents or through independent contractors, and become entitled to the payment of the balance of the Contract Price.

If the Surety fails to take either of the actions set out above, it shall be deemed to have waived its right to perform and complete the Contract and receive payment of the balance of the Contract Price and the City shall be entitled to enforce any remedies available at law, including but not limited to completing the Contract itself and recovering any cost in excess of the Original Contract Price from the Surety.

This Bond and all obligations created hereunder shall be performable in Harris County, Texas. This Bond is given in compliance with the provisions of Chapter 2253, Texas Government Code, as amended, which is incorporated herein by this reference.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other Party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

**IN WITNESS THEREOF**, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

_____
Name of Contractor

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

_____
Full Name of Surety

_____
Address of Surety for Notice

_____

_____
Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

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

_____ _____
Legal Assistant Date

END OF DOCUMENT

Document 00611

STATUTORY PAYMENT BOND

**THAT WE**, _____, as Principal, hereinafter called Contractor and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound unto the City of Houston, a municipal corporation, in the sum of $_____ for the payment of which sum, well and truly to be made to the City of Houston, and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

**THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT**:

**WHEREAS,** the Contractor has on or about this day executed a contract in writing with the City of Houston for _____
_____,
all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein;

**NOW, THEREFORE**, if the said Contractor shall pay all claimants supplying labor and materials to him or a Subcontractor in the prosecution of the Work provided for in the Contract, then, this obligation shall be void; otherwise the same is to remain in full force and effect;

**PROVIDED HOWEVER**, that this Bond is executed pursuant to the provisions of Chapter 2253, Texas Government Code, as amended, and all liabilities on this Bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

**IN WITNESS THEREOF**, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

_____
Name of Contractor

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

_____
Full Name of Surety

_____
Address of Surety for Notice

_____

_____
Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

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

_____ _____
Legal Assistant Date

END OF DOCUMENT

Document 00612

ONE-YEAR MAINTENANCE BOND

**THAT WE**, _____, as Principal, hereinafter called Contractor, and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of $_____, for the payment of which sum well and truly to be made to the City of Houston and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

**THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:**

**WHEREAS**, the Contractor has on or about this day executed a Contract in writing with the City of Houston for _____
_____,
all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

**NOW THEREFORE**, if the said Contractor shall comply with the provisions of Paragraph 11.5.1 of the General Conditions, and correct work not in accordance with the Contract documents discovered within the established one-year period, then this obligation shall become null and void, and shall be of no further force and effect; otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

**IN WITNESS THEREOF**, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

_____
Name of Contractor

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

_____
Full Name of Surety

_____
Address of Surety for Notice

_____

_____
Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

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

_____
Legal Assistant

_____
Date

END OF DOCUMENT

Document 00613

ONE-YEAR SURFACE CORRECTION BOND

**THAT WE**, _____, as Principal, hereinafter called Contractor, and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of $_____ such sum being equal to four percent of the Original Contract Price, for the payment of which sum to be made to the City of Houston and its successors, Contractor and Surety do bind themselves, their successors, jointly and severally.

**THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:**

**WHEREAS**, the Contractor has entered into a Contract in writing with the City of Houston, Texas, dated of even date herewith, for _____
_____,
all of such work to be done in accordance with the Contract documents therein referred to, and adopted by the City Council of the City of Houston.

**NOW THEREFORE**, if the Contractor shall comply with the provisions of Paragraph 11.5.1 of the General Conditions, and repair, replace, restore, and correct surface work associated with backfill operations of subsurface work not in accordance with the Contract documents discovered within one year from the date that the One-year Maintenance Bond has expired, then this obligation shall become null and void, and shall be of no further force and effect; otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

**IN WITNESS THEREOF**, the said Principal and Surety have signed and sealed this instrument on the respective dates written below their signatures.

ATTEST, SEAL: (if a corporation)
WITNESS: (if not a corporation)

By: _____
Name:
Title:

_____
Name of Contractor

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

_____
Full Name of Surety

_____
Address of Surety for Notice

_____

_____
Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

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

_____
Legal Assistant

_____
Date

END OF DOCUMENT

Document 00620

AFFIDAVIT OF INSURANCE

**BEFORE ME**, the undersigned authority, on this day personally appeared

_____, who
Affiant

being by me duly sworn on his oath stated that he is _____, of
Title

_____,
Contractor's Company Name

the Contractor named and referred to within the Contract documents; that he is fully competent and authorized to give this affidavit and that the attached original insurance certificate truly and accurately reflects the insurance coverage that is now available and will be available during the term of the Contract.

_____
Affiant's Signature

SWORN AND SUBSCRIBED before me on _____.
Date

_____
Notary Public in and for the State of TEXAS

_____
Print or type Notary Public name

My Commission Expires: _____
Expiration Date

END OF DOCUMENT

Document 00624

AFFIDAVIT OF COMPLIANCE WITH
AFFIRMATIVE ACTION PROGRAM

**BEFORE ME**, the undersigned authority, on this day personally appeared

_____, who
Affiant

being by me duly sworn on his oath stated that he is _____,
Title

of _____,
Contractor

the Contractor named and referred to within the Contract documents; that he is fully competent and authorized to give this affidavit and that the Contract is in compliance with the Affirmative Action Program of the City and has done all that is required by the Contract documents, the Affirmative Action Program, and pursuant to Chapter 15, Code of Ordinances, City of Houston, §15.16 et seq.

_____
Affiant's Signature

SWORN AND SUBSCRIBED before me on this day of _____, 20___.

_____
Notary Public in and for the State of TEXAS

_____
Print or Type Notary Public Name

My Commission Expires: _____
Expiratio

END OF DOCUMENT

**Document 00630**
**(POP-2)**
**City of Houston**
**Certification of Compliance with**
**Pay or Play Program**

Contractor Name: _____ $ _____
*(Contractor/Subcontractor)* *(Amount of Contract)*

Contractor Address: _____

Project No.: «WBSNo» _____

Project Name: «LegalPrjName» _____

POP Liaison Name: _____

In accordance with the City of Houston Pay or Play Program authorized by Ordinance 2007-534 and Executive Order 1-7, Contractor/Subcontractor agrees to abide by the terms of this Program. This certification is required of all contractors for contracts subject to the program. You must agree EITHER to PAY or to PLAY for all covered employees. The Contractor/Subcontractor may also Pay on behalf of some covered employees and Play on behalf of other covered employees.

The Contractor/Subcontractor will comply with all provisions of the Pay or Play Program and will furnish all information and reports requested to determine compliance with program requirements of the Pay or Play Program (See Executive Order 1-7 for the terms of the Pay or Play program) The criteria of the program is as follows:

The Contractor/Subcontractor agrees to **"Pay"** $1.00 per hour for work performed by covered employees under the contract with the City. If independent contract labor is utilized the Contractor/Subcontractor agrees to report hours worked by the independent contract laborer and pay $1.00 per hour for work performed.

Otherwise the Contractor/Subcontractor agrees to **"Play"** by providing health benefits to each covered employee. The health benefits must meet the following criteria:

1. The employer will contribute no less than $150 per employee per month toward the total premium cost for single coverage only; and
2. The employee contribution, if any amount, will be no greater than 50% of the total premium cost and no more than $150 per month.
3. Pursuant to E.O. 1-7 section 4.04 a contractor is deemed to have complied with respect to a covered employee who is not provided health benefits if the employee refuses the benefits and the employee's contribution to the premium is no more than $40 per month.

| Please select whether you choose to: | Pay | Play | Both |
|---|---|---|---|
| | | | |

The Contractor/Subcontractor will file compliance reports with the City, which will include activity for covered employees subject to the program, in the form and to the extent requested by the administering department. Compliance reports shall contain information including, but not limited to, documentation showing employee health coverage and employee work records.
**Note: The Contractor is responsible to the City for the compliance of covered employees of covered subcontractors and only forms that are accurate and complete will be accepted.**

| *Estimated Number of: | Prime Contractor | Sub-Contractor |
|---|---|---|
| Total Employees on City Job | | |
| Covered Employees | | |
| Non-Covered Employees | | |
| Exempt Employees | | |

***Required**

I hereby certify that the above information is true and correct.

_____ _____
Contractor ***(Signature)*** Date

_____
Name and Title ***(Print or type)***

# Document 00631
# (POP-3)
# City of Houston
# Pay or Play Program
# List of Subcontractors

**Prime Contractor:** _____
**Project Number/Description:** _____

**POP Contact Person:** _____
**Address:** _____
**Email:** _____
**Phone:** _____

**Note: Include ALL subcontractors (use additional form if necessary)**

| Subcontractor Name | Supplier Y/N? | Amount of Subcontract | Check One: Pay | Check One: Play | Check One: Both (Pay and Play) | Check One: N/A | Contact Person | Phone | Email Address | Mailing Address |
|---|---|---|---|---|---|---|---|---|---|---|
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*If the above information is found to be submitted fraudulently with the intent to bypass or deceive the purpose of the Pay or Play Program the contractor will be held liable for all compliance requirements from the inception of the contract. All subcontracts that surpass the $200,000.00 threshold will be responsible for Pay or Play compliance from the inception of the contract.

## Affidavit

I hereby solemnly affirm, certify and confirm that the total sub-contract value stated above is the final value of the contract (*) including all material costs, fuel, payroll, taxes, fees, profit sharing, labor or any payments in relation to the contracted work and no separate payment or contract has been made for the sub-contract under contract no._____ . The above sub-contract value includes all the costs related to work under the contract. The contractor and sub-contractor(s) agree to inform The Mayor's Office of Business Opportunity of any related cost(s) added to the contracted work and re-submit POP-3 with the current value of the sub-contract. I understand that compliance with "Pay or Play" program is mandatory and nothing has been hidden to circumvent the program requirements.

_____
Contractor Authorized Representative & Title Date
Name & Signature

Document 00633

CERTIFICATION BY PROPOSED MATERIAL SUPPLIERS,
LESSORS, AND PROFESSIONAL SERVICE PROVIDERS
REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Company Name: _____ $_____
(Supplier, Lessor, Professional Service Provider) (Amount of Contract)

Company Address: _____

Company Telephone Number:_____ Fax:_____

E-mail Address: _____

Web Page/URL Address:_____

Company Tax Identification Number: _____

Project No.: [*WBS/CIP/AIP/File No.*]_____

Project Name: [*Legal Project Name*]_____

In accordance with the City of Houston Ordinance 78-1538, Supplier/Lessor/Professional Service Provider represents to be an equal opportunity employer and agrees to abide by the terms of the Ordinance. This certification is required of all Suppliers/Lessors/Professional Service Providers (herein Supplier) with contracts in the amount of $10,000.00 or more.

[ ] Yes [ ] No Supplier agrees not to discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age.

[ ] Yes [ ] No Supplier agrees that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin, or age.

[ ] Yes [ ] No Supplier will comply with all provisions of Executive Order No. 11246 and rules, regulations and applicable orders of the Department of Labor or other Federal Agency responsible for enforcement of applicable equal opportunity and affirmative action provisions and will likewise furnish all information and reports required by the Mayor or Contract Compliance Officers for the purpose of investigation to ascertain and effect compliance with the City of Houston's Office of Affirmative Action and Contract Compliance.

[ ] Yes [ ] No The Supplier shall file and cause their sub-tier contractors to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor or Contract Compliance Officers. Compliance reports filed at such times as directed shall contain information including, but not limited to, the practices, policies, programs, and employment policies.

I hereby certify that the above information is true and correct.

_____ _____
COMPANY OFFICER (Signature) DATE

_____
NAME AND TITLE (Print or type)

END OF DOCUMENT

**********

*Instructions:*

*Before submitting this document, Contractor shall provide*

1. *Payment Notifications (00646) to each subcontractor on each contract;*
2. *A copy to the City Monitoring Authority of all applicable Payment Notifications;*
3. *A list to the City Monitoring Authority containing the information requested in this document for each subcontractor from which Contractor has withheld payment; and*
4. *The notarized signature of Contractor's Representative.*

**********

Document 00642

# MONTHLY SUBCONTRACTOR PAYMENT REPORTING FORM

Legal Project Name:_____

Outline Agreement No.:_____ WBS No.:_____

Contractor's Company Name: _____

Address: _____

## CERTIFICATION

_____, Contractor's Representative for the above referenced Contract, hereby certifies that (1) Contractor has paid all subcontractors, except those noted below, (2) Contractor made such payments (a) in proportion to the amount City paid Contractor and (b) in accordance and compliance with all applicable Contract Documents and laws; and (3) Contractor withheld no sums from any subcontractor for allegations of deficiency in Work. The term "subcontractor", as used herein, includes all persons or firms furnishing work, materials, services or equipment Contractor ordered incorporated into Work or placed near the Project for which the City made partial payment.

EXCEPTION: Contractor sent Payment Notifications to the following subcontractors explaining why Contractor withheld payment. Copies are attached.

| | |
|---|---|
| Subcontractor Name:_____ | Subcontractor Name: _____ |
| Street Address: _____ | Street Address: _____ |
| City, State, and Zip Code: _____ | City, State, and Zip Code: _____ |
| Amount of Payment Withheld:_____ | Amount of Payment Withheld: _____ |
| Date Payment First Withheld: _____ | Date Payment First Withheld: _____ |
| Description of Good Faith Reason:_____ | Description of Good Faith Reason:_____ |
| _____ | _____ |

_____
(Signature of Contractor's Representative)

_____
(Print or Type Name of Contractor's Representative)

**SWORN TO AND SUBSCRIBED** before me on:

_____
Date

_____
Notary Public in and for the State of Texas

My Commission Expires: _____
Expiration Date

_____
Print or Type Name of Notary Public

# PAYMENT NOTIFICATION
# EXPLANATION OF WITHHOLDING

**********

*Instructions:*

*If Contractor withholds any amount of a payment to a Subcontractor for any reason, the Contractor shall send Payment Notifications to the Subcontractor explaining why the payment was withheld.*

*Contractor shall provide the City Monitoring Authority with Payment Notifications for each subcontractor from which Contractor has withheld payment. Contractor shall submit all necessary Payment Notifications (Document 00646), Payment Reporting Forms (Document 00642), and other documentation at the same time Contractor submits the Application and Certification for Payment or the Estimate for Payment.*

**********

Document 00646

## PAYMENT NOTIFICATION – EXPLANATION OF WITHHOLDING

Legal Project Name:_____

Outline Agreement No.:_____ WBS No.:_____

Contractor's Company Name: _____

Address: _____

Date: _____

## SUBCONTRACTOR PAYMENT INFORMATION:

Subcontractor Name:_____

Street Address: _____

City, State, and Zip Code: _____

Business Phone Number: _____

Amount of Subcontractor Invoice: _____

Amount of Payment Made: _____

Amount of Payment Withheld:_____

Date Payment First Withheld: _____

DETAILED EXPLANATION OF WITHHOLDING: _____

_____

_____

_____

_____

_____ _____

(Signature of Contractor's Representative) (Print or Type Name of Contractor's Representative)

**********

*List of Changes:*

*02-04-2005: Added new Paragraph 3.25.1.3 concerning strict liability. Edited Paragraph 3.25.1.1 accordingly. Edited Paragraph 9.6.1.4 to remove the words "retainage of".*

*08-15-2006: Revised many references to Section(s) to read Paragraph(s). Added Small Business Enterprise (SBE) requirement to Paragraphs 3.5.3, 3.5.3.1, 3.5.3.2 and 3.5.3.3.*

*08-17-2006: Added new Paragraphs 5.2.4, 5.2.5, 9.2.1 and 9.4.2 concerning prompt payment provisions.*

*10-10-2006: Added new Paragraphs 9.7.1.8, 9.7.1.9 concerning prompt payment provisions. Changed 9.8.1 to "20 days", and added language to 9.8.2 concerning "7 calendar days" and payment disputes.*

*03-10-2008: Revised Table 1 after 11.2.11 (Installation Floater), and expanded Paragraph 11.5.1 on Maintenance Bonds.*

*09-10-2008: Revised 5.2.5[sic] on page 17 to read 5.2.4.*

*10-24-2008: Revised many sections to include or amend numbering.*

*08-01-2009: Amended 1.1.6., definition of City Engineer. Amended 2.2 to say "Duties" and added 2.2.2 stating that the contract imposes no implied duty on City. Added 3.5.4 concerning Contractor Participation in the Pay or Play Program. Added 3.28 pertaining to Contractor Debt. Amended 4.1.2 to prohibit the City Engineer from delegating signature authority under 4.4. Amended 4.1.11 stating that City owes no duty to Contractor not stated in contract. Amended 4.3.2 to delete second sentence concerning City Engineers decision as a condition precedent to litigation. Amended 4.6 to require both parties to wave claims, attorney fees, and interest. Amended 11.2.6 to require Contractor to notify the City of any Insurance Policy cancelation or modification. Amended 11.2.8 to exempt Workers' Compensation coverage from certain documentation requirements. Amended Table 1 after 11.2.11 to specify automobile coverage requirements. Added 11.3.3 to address content requirements on Certificates of Insurance. Added 13.3.2 to extend joint and several liability to any series, affiliate, subsidiary, or successor to which Contractor assigns or transfers assets. Amended throughout to standardize references to Sections (x.x), Paragraphs (x.x.x), and Subparagraphs (x.x.x.x and below).*

*01-15-2010: Amended Sections 4.4 and 4.6 concerning written decisions, findings of fact, and hearings by the City engineer, precedent to litigation, and interest under Chapter 2251 of the Texas Local Government Code. Removed Section 4.5 NON-BONDING MEDIATION and renumbered and renamed Section 4.6 as 4.5 CONDITION PRECEDENT TO SUIT; WAIVER OF ATTORNEY FEES AND INTEREST.*

*05-01-2010: Amended Subsection 1.1.5 to change "municipal corporation" to "home rule municipality". Amended Subsection 3.9.1.1 to reflect change from Low Sulfur Deisel Fuel (500 ppm) to Ultra Low Sulfur Fuel (15 ppm).*

*12-07-2010: Amended Section 14.1.1.5 to mirror change in Section 3.9.1.1; Low Sulfur Diesel Fuel was changed to Ultra Low Sulfur Fuel.*

*12-09-2010: Amended Section 4.5 (and Table of Contents) by adding "Interim Payment Waiver & Release" language from Document 00850. Amended Subsection 11.3 to include new insurance requirements.*

*12-10-2010: Inserted phrase into definition of Claim (§1.1.7) defining what a Claim can constitute*

Document 00700

# GENERAL CONDITIONS

August 15, 2015 EDITION

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. THE CITY
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS AND SUPPLIERS
6. CONSTRUCTION BY THE CITY OR BY SEPARATE CONTRACTORS
7. CHANGES IN THE WORK
8. TIME
9. PAYMENTS AND COMPLETION
10. SAFETY PRECAUTIONS
11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF THE WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT

*ARTICLE 1 - GENERAL PROVISIONS* ..... 3

*1.1 DEFINITIONS* ..... 3
*1.2 EXECUTION, CORRELATION, AND INTENT* ..... 5
*1.3 OWNERSHIP AND USE OF DOCUMENTS* ..... 6
*1.4 INTERPRETATION* ..... 6

*ARTICLE 2 - THE CITY* ..... 6

*2.1 LIMITATIONS OF THE CITY'S OFFICERS AND EMPLOYEES* ..... 6
*2.2 DUTIES OF THE CITY* ..... 6
*2.3 AVAILABILITY OF LAND AND USE OF SITE* ..... 6
*2.4 THE CITY'S RIGHT TO STOP THE WORK* ..... 7
*2.5 THE CITY'S RIGHT TO CARRY OUT WORK* ..... 7

*ARTICLE 3 - CONTRACTOR* ..... 7

*3.1 RESPONSIBILITIES* ..... 7
*3.2 REVIEW OF CONTRACT AND FIELD CONDITIONS BY CONTRACTOR* ..... 7
*3.3 SUPERVISION AND CONSTRUCTION PROCEDURES* ..... 7
*3.4 SUPERINTENDENT* ..... 8
*3.5 LABOR* ..... 8
*3.6 PREVAILING WAGE RATES* ..... 9
*3.7 LABOR CONDITIONS* ..... 9
*3.8 DRUG DETECTION AND DETERRENCE* ..... 9
*3.9 MATERIALS & EQUIPMENT* ..... 10
*3.10 PRODUCT OPTIONS AND SUBSTITUTIONS* ..... 10
*3.11 CASH ALLOWANCES* ..... 11
*3.12 WARRANTY* ..... 11
*3.13 TAXES* ..... 12
*3.14 PERMITS, FEES, AND NOTICES* ..... 12
*3.15 CONSTRUCTION SCHEDULES* ..... 12
*3.16 DOCUMENTS AND SAMPLES AT THE SITE* ..... 12
*3.17 MANUFACTURER'S SPECIFICATIONS* ..... 12
*3.18 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES* ..... 13
*3.19 CULTURAL RESOURCES AND ENDANGERED SPECIES* ..... 13
*3.20 CUTTING AND PATCHING* ..... 14
*3.21 CLEANING* ..... 14
*3.22 SANITATION* ..... 14
*3.23 ACCESS TO WORK AND TO INFORMATION* ..... 14
*3.24 TRADE SECRETS* ..... 14
*3.25 INDEMNIFICATION* ..... 14
*3.26 RELEASE AND INDEMNIFICATION – PATENT, COPYRIGHT, TRADEMARK, AND TRADE SECRET INFRINGEMENT* ..... 15
*3.27 INDEMNIFICATION PROCEDURES* ..... 15
*3.28 CONTRACTOR DEBT* ..... 156

*ARTICLE 4 - ADMINISTRATION OF THE CONTRACT* ..... 16

*4.1 CONTRACT ADMINISTRATION* ..... 16
*4.2 COMMUNICATIONS IN ADMINISTRATION OF THE CONTRACT* ..... 17
*4.3 CLAIMS AND DISPUTES* ..... 17
*4.4 RESOLUTION OF CLAIMS AND DISPUTES* ..... 18
*4.5 CONDITION PRECEDENT TO SUIT; WAIVER OF ATTORNEYFEES AND INTEREST* ..... 18
*4.6 INTERIM PAYMENT WAIVER & RELEASE* ..... 18

*ARTICLE 5 - SUBCONTRACTORS AND SUPPLIERS* ..... 19

*5.1 AWARD OF SUBCONTRACTS OTHER CONTRACTS FOR PORTIONS OF THE WORK* ..... 19
*5.2 CONTRACTOR RESPONSIBILITY FOR SUBCONTRACTORS* ..... 19

*ARTICLE 6 - CONSTRUCTION BY THE CITY OR BY SEPARATE CONTRACTORS* ..... 19

*6.1 THE CITY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS* ..... 19
*6.2 COORDINATION* ..... 19
*6.3 MUTUAL RESPONSIBILITY* ..... 20
*6.4 THE CITY'S RIGHT TO CLEAN UP* ..... 20

*ARTICLE 7 - CHANGES IN THE WORK* ..... 20

*7.1 CHANGES* ..... 20
*7.2 WORK CHANGE DIRECTIVES* ..... 20
*7.3 ADJUSTMENTS IN CONTRACT PRICE* ..... 21
*7.4 MINOR CHANGES IN THE WORK* ..... 22

*ARTICLE 8 - TIME* ..... 22

*8.1 PROGRESS AND COMPLETION* ..... 22
*8.2 DELAYS AND EXTENSIONS OF TIME* ..... 22

*ARTICLE 9 - PAYMENTS AND COMPLETION* ..... 23

*9.1 UNIT PRICE WORK* ..... 23
*9.2 ESTIMATES FOR PAYMENT, UNIT PRICE WORK* ..... 23
*9.3 STIPULATED PRICE WORK* ..... 24
*9.4 APPLICATIONS FOR PAYMENT, STIPULATED PRICE WORK* ..... 24
*9.5 CERTIFICATES FOR PAYMENT* ..... 24
*9.6 COMPUTATIONS OF CERTIFICATES FOR PAYMENT* ..... 24
*9.7 DECISIONS TO WITHHOLD CERTIFICATION* ..... 24
*9.8 PROGRESS PAYMENTS* ..... 25
*9.9 DATE OF SUBSTANTIAL COMPLETION* ..... 25
*9.10 PARTIAL OCCUPANCY OR USE* ..... 26
*9.11 FINAL COMPLETION AND FINAL PAYMENT* ..... 26

*9.12 LIQUIDATED DAMAGES ..... 27*

*ARTICLE 10 - SAFETY PRECAUTIONS ..... 27*

*10.1 SAFETY PROGRAMS ..... 27*
*10.2 POLLUTANTS AND POLLUTANT FACILITIES ..... 28*
*10.3 SAFETY OF THE ENVIRONMENT, PERSONS, AND PROPERTY ..... 28*
*10.4 EMERGENCIES ..... 28*

*ARTICLE 11 - INSURANCE AND BONDS ..... 28*

*11.1 GENERAL INSURANCE REQUIREMENTS ..... 28*
*11.2 INSURANCE TO BE PROVIDED BY CONTRACTOR ..... 29*
*11.3 PROOF OF INSURANCE ..... 32*
*11.4 PERFORMANCE AND PAYMENT BONDS ..... 33*
*11.5 MAINTENANCE BONDS ..... 33*
*11.6 SURETY ..... 33*
*11.7 DELIVERY OF BONDS ..... 344*

*ARTICLE 12 - UNCOVERING AND CORRECTION OF THE WORK ..... 344*

*12.1 UNCOVERING OF THE WORK ..... 34*
*12.2 CORRECTION OF THE WORK ..... 34*
*12.3 ACCEPTANCE OF NONCONFORMING WORK ..... 34*

*ARTICLE 13 - MISCELLANEOUS PROVISIONS ..... 34*

*13.1 GOVERNING LAWS ..... 34*
*13.2 SUCCESSORS ..... 345*
*13.3 BUSINESS STRUCTURE AND ASSIGNMENTS . 355*
*13.4 WRITTEN NOTICE ..... 35*
*13.5 RIGHTS AND REMEDIES ..... 35*
*13.6 TESTS AND INSPECTIONS ..... 35*
*13.7 INTEREST ..... 35*
*13.8 PARTIES IN INTEREST ..... 36*
*13.9 ENTIRE CONTRACT ..... 36*
*13.10 WRITTEN AMENDMENT ..... 36*
*13.11 COMPLIANCE WITH LAWS ..... 36*
*13.12 SEVERABILITY ..... 36*

*ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT ..... 36*

*14.1 TERMINATION BY THE CITY FOR CAUSE ..... 36*
*14.2 TERMINATION BY THE CITY FOR CONVENIENCE ..... 37*
*14.3 SUSPENSION BY THE CITY FOR CONVENIENCE ..... 37*
*14.4 TERMINATION BY CONTRACTOR ..... 38*

ARTICLE 1 - GENERAL PROVISIONS

*1.1 DEFINITIONS*

*1.1.1 Agreement:* Document signed by the Parties and binding the Parties, containing the name of Contractor, title and location of the Project, Original Contract Time, Original Contract Price, enumeration of documents included in the Contract, and other provisions.

*1.1.2 Bonds:* Performance Bond, Payment Bond, Maintenance Bond, and other Surety instruments executed by Surety. When in singular form, refers to individual instrument.

*1.1.3 Business Enterprise*: Any business entity registered in a program authorized by 49 C.F.R. § 26 (where applicable) or City Code of Ordinances, Chapter 15, Article II, relating to Equal Opportunity Employment and taking affirmative action to ensure that applicants are employed and employees are treated without regard to race, religion, color, sex, national origin, or age. The term "Business Enterprise" may include any Disadvantaged Business Enterprise ("DBE"), Minority Business Enterprise ("MBE"), Woman Business Enterprise ("WBE"), Small Business Enterprise ("SBE"), Person with Disability Enterprise ("PDBE"), and any Historically Underutilized Business ("HUB").

*1.1.4 Business Enterprise Policy:* Contract documents and applicable policies relating to Business Enterprises and authorized under 49 C.F.R. § 26 or City Code of Ordinances, Chapter 15, Article II.

*1.1.5 Cash Allowance*: An estimated sum of money to be used only for a limited class of expenditures such as utility relocation costs, fees for special licenses or permits, or other "pass-through" costs that would be the same for any contractor. Cash Allowances may not be used to purchase goods or services that are not specified in the Contract. The unspecified items must be purchased according to the terms of Article 7.

*1.1.6 Change Order:* Written instrument prepared by the City and signed by City Engineer and Contractor, specifying the following:

1.1.6.1 a change in the Work;
1.1.6.2 a change in Contract Price, if any; and
1.1.6.3 a change in Contract Time, if any.

The value of a Change Order is the net amount after offsetting all deductions against all additions effected by the Change Order.

*1.1.7 City:* The City of Houston, a home rule municipality located principally within Harris County, Texas, including its successors and its authorized representatives.

*1.1.8 City Engineer:* The City Engineer, or the City employee representing the City Engineer, designated in the Agreement and authorized to represent the City, or successors.

*1.1.9 Claim:* Written demand or written assertion by one Party seeking adjustment of the Contract, payment of money, extension of time, or other relief under the Contract and includes, but is not limited to, claims for materials, labor, equipment, delay, changes, adjustments, substitutions, fees and third party claims. The Party making the Claim has the responsibility to substantiate the Claim.

*1.1.10 Conditions of the Contract:* General Conditions and Supplementary Conditions.

*1.1.11 Construction Manager:* Person or firm under contract with the City as its authorized representative to oversee and administer construction of the Work, and who may perform the role of Project Manager and Inspector, as designated by City Engineer in writing.

*1.1.12 Contract:* The Agreement; documents enumerated in and incorporated into the Agreement, Modifications, and amendments.

*1.1.13 Contract Price:* The monetary amount stated in the Agreement adjusted by Change Order, and increases or decreases in Unit Price Quantities, if any.

*1.1.14 Contract Time:* The number of days stated in the Agreement to substantially complete the Work, plus days authorized by Change Order.

*1.1.15 Contractor:* Person or firm identified as such in the Agreement including its successors and its authorized representatives.

*1.1.16 Date of Commencement of the Work:* Date established in Notice to Proceed on which Contract Time will commence. This date will not be changed by failure of Contractor, or persons or entities for whom Contractor is responsible, to act.

*1.1.17 Date of Substantial Completion:* Date that construction, or portion thereof designated by City Engineer, is certified by City Engineer to be substantially complete.

*1.1.18 Design Consultant:* Person or firm, under contract with the City, to provide professional services during construction and its authorized representatives. If a Design Consultant is not employed for services during construction, Project Manager will perform duties of Design Consultant designated in the Contract in addition to usual duties of Project Manager.

*1.1.19 Drawings:* Graphic and pictorial portions of the Contract that define the character and scope of the Work.

*1.1.20 Extra Unit Price:* Unit Prices, which may be required for completion of the Work. These Unit Prices and Unit Price Quantities are in the Contract and are included in Original Contract Price.

*1.1.21 Furnish:* To supply, pay for, deliver to the site, and unload.

*1.1.22 General Requirements:* The sections of Division 01 Specifications that specify administrative and procedural requirements and temporary facilities required for the Work.

*1.1.23 Inspector:* City's employee or agent authorized to assist with inspection of the Work.

*1.1.24 Install:* Unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, clean, protect, and similar operations.

*1.1.25 Legal Holiday:* Day established by the City Council as a holiday.

*1.1.26 Major Unit Price Work:* An individual Unit Price item,

1.1.26.1 whose value is greater than five percent of Original Contract Price,

1.1.26.2 whose value becomes greater than five percent of Original Contract Price as the result of an increase in quantity, or

1.1.26.3 whose value is $100,000, whichever is least.

*1.1.27 Minor Change in the Work*: A written change in the Work, ordered by City Engineer, that does not change Contract Price or Contract Time, and that is consistent with the general scope of the Contract.

*1.1.28 Modification:* Change Order, Work Change Directive, or Minor Change in the Work.

*1.1.29 Notice of Noncompliance:* A written notice by City Engineer to Contractor regarding defective or nonconforming work that does not meet the Contract requirements, and that establishes a time by which Contractor shall correct the defective or nonconforming work.

*1.1.30 Notice to Proceed:* A written notice by City Engineer to Contractor establishing Date of Commencement of the Work.

*1.1.31 Office of Business Opportunity:* any reference to, or use of, the "Office of Affirmative Action" shall mean the Office of Business Opportunity, or any such future name to which it is changed.

*1.1.32 Original Contract Price:* The monetary amount originally stated in the Agreement.

*1.1.33 Parties:* Contractor and the City. When in singular form, refers to Contractor or the City.

*1.1.34 Pollutant:* Any materials subject to the Texas Solid Waste Disposal Act.

*1.1.35 Pollutant Facility:* Any facility regulated by the State of Texas to protect the health and environment from contamination by Pollutants, including without limitation, landfills, oil and gas production and storage facilities, wastewater facilities, waste injection wells, and storage tanks (including drums).

*1.1.36 Product:* Materials, equipment, or systems incorporated into the Work or to be incorporated into the Work.

*1.1.37 Product Data:* Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by Contractor to illustrate a Product.

*1.1.38 Project:* Total construction, of which the Work performed under the Contract may be the whole or a part, and which may include construction by the City or by separate contractors.

*1.1.39 Project Manager:* City Engineer's authorized representative for administration of the Work. Titles used within the City's departments may be different than those used in this definition.

*1.1.40 Provide:* Furnish and Install, complete, ready for intended use.

*1.1.41 Samples:* Physical examples that illustrate Products, or workmanship, and establish standards by which the Work is judged.

*1.1.42 Shop Drawings:* Drawings, diagrams, schedules, and other data specially prepared for the Work by Contractor, Subcontractor or Supplier, to illustrate a portion of the Work.

*1.1.43 Specifications:* Divisions 01 through 16 of the documents that are incorporated into the Agreement, consisting of written General Requirements and requirements for Products, standards, and workmanship for the Work, and performance of related services.

*1.1.44 Stipulated Price:* Single lump sum amount stated in the Contract for completion of the Work, or for designated portion of the Work.

*1.1.45 Subcontractor:* Person or firm that has direct or indirect contract with Contractor or with another Subcontractor to perform a portion of the Work and its authorized representatives.

*1.1.46 Superintendent:* Employee of Contractor having authority and responsibility to act for and represent Contractor.

*1.1.47 Supplementary Conditions:* Part of Conditions of the Contract that amends or supplements General Conditions.

*1.1.48 Supplier:* Manufacturer, distributor, materialman, or vendor having a direct agreement with Contractor or Subcontractor for Products, or services and its authorized representatives.

*1.1.49 Surety:* Corporate entity that is bound by one or more Bonds, and is responsible for completion of the Work, including the correction period, and for payment of debts incurred in fulfilling the Contract. Surety shall include co-surety or reinsurer, as applicable.

*1.1.50 Underground Facilities:* Pipes, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments and encasements containing such facilities that exist below ground level.

*1.1.51 Unit Price:* An amount stated in the Contract for an individual, measurable item of work, which, when multiplied by actual quantity incorporated into the Work, amounts to full compensation for completion of the item, including work incidental to it.

*1.1.52 Unit Price Quantities:* Quantities indicated in the Contract that are approximations made by the City for contracting purposes.

*1.1.53 Work:* Entire construction required by the Contract, including all labor, Products, and services provided by Contractor to fulfill Contractor's obligations. The Work may constitute the whole or a portion of the Project.

*1.1.54 Work Change Directive:* A written change in the Work, ordered by City Engineer, that is within the general scope of the Contract and consisting of additions, deletions, or other revisions. A Work Change Directive will state proposed basis for adjustment, if any, in Contract Price or Contract Time, or both.

*1.2 EXECUTION, CORRELATION, AND INTENT*

1.2.1 Execution of the Contract by Contractor is conclusive that Contractor has visited the Work site, become familiar with local conditions under which the Work will be performed, and fully informed itself as to conditions and matters which can affect the Work or costs. Contractor further agrees that it has carefully correlated personal observations with requirements of the Contract.

1.2.2 The Contract and Modifications have been read and carefully considered by Contractor, who understands and agrees to their sufficiency for the Work. The Contract may not be more strongly construed against the City than against Contractor and Surety.

1.2.3 Contractor shall include all items necessary for proper execution and completion of the Work.

1.2.4 Reference to standard specifications, manuals, or codes of a technical society, organization, or association, or to laws or regulations of a governmental authority, whether specific or implied, mean the latest edition in effect as of date of receipt of bids, except as may be otherwise specifically stated in the Contract.

1.2.5 No provision of any referenced standard, specification, or manual changes the duties and responsibilities of the City, City Engineer, Contractor, or Design Consultant from those set forth in the Contract. Nor do these provisions assign to Design Consultant any duty or authority to supervise or direct performance of the Work or any duty or

authority to undertake any actions contrary to provisions of the Contract.

1.2.6 Organization of Specifications into divisions, sections, and articles and arrangement of Drawings does not control Contractor in dividing the Work among Subcontractors or in establishing the extent of work to be performed by any trade.

1.2.7 Unless otherwise defined in the Contract, words which have well-known construction industry technical meanings are used in the Contract in accordance with these recognized meanings.

*1.3 OWNERSHIP AND USE OF DOCUMENTS*

1.3.1 Drawings, Specifications, and other documents prepared by the City or by Design Consultant are instruments of service through which the Work to be executed by Contractor is described. Contractor may retain one Contract record set.

1.3.2 Neither Contractor, Subcontractor, nor Supplier will own or claim a copyright to documents contained in the Contract or any part of the Contract.

1.3.3 Documents contained in the Contract, prepared by the City or by Design Consultant, and copies furnished to Contractor, are for use solely with respect to the Work. They may not be used by Contractor, Subcontractor or Supplier on other projects or for additions to the Work, outside the scope of the Work, without the specific written consent of City Engineer, and Design Consultant, when applicable.

1.3.4 Contractor, Subcontractors, and Suppliers are granted a limited license to use and reproduce applicable portions of the Contract appropriate to and for use in execution of their work under the Contract.

1.4 *INTERPRETATION*

1.4.1 Specifications are written in an imperative streamlined form and are directed to Contractor, unless noted otherwise. When written in this form, words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.4.2 In the interest of brevity, the Contract frequently omits modifying words such as "all" and "any" and articles such as "the" and "an", but an absent modifier or article is not intended to affect interpretation of a statement.

## ARTICLE 2 - THE CITY

2.1 *LIMITATIONS OF THE CITY'S OFFICERS AND EMPLOYEES*

2.1.1 No officer or employee of the City may authorize Contractor to perform an act or work contrary to the Contract, except as otherwise provided in the Contract.

2.2 *DUTIES OF THE CITY*

2.2.1 If a building permit is required, the City will process an application for, and Contractor shall purchase the building permit before Date of Commencement of the Work.

2.2.2 The City will make available to Contractor a reproducible set of Drawings. Additional copies will be furnished, on Contractor's request, at the cost of reproduction.

2.2.3 When necessary for performance of the Work, the City will provide surveys describing physical characteristics, legal limitations, legal description of site, and horizontal and vertical control adequate to lay out the Work.

2.2.4 Information or services that the City is required to provide under the Contract will be provided by the City with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 The Contract imposes no implied duty on the City. The City does not warrant any plans or specifications associated with the Contract.

2.2.6 Except as expressly stated in this Article, the City owes no duty to the Contractor or any subcontractor.

2.3 *AVAILABILITY OF LAND AND USE OF SITE*

2.3.1 The City will furnish, as indicated in the Contract, rights-of-way, land on which the Work is to be performed, and other land designated in the Contract for use by Contractor unless otherwise provided in the Contract.

2.3.2 Contractor shall confine operations at site to those areas permitted by law, ordinances, permits, and the Contract, and may not unreasonably encumber site with materials or equipment.

2.3.3 In addition to land provided by the City under Section 2.3, Contractor shall provide all land and access to land that may be required for use by Contractor for temporary construction facilities or for storage of materials and equipment, and shall indemnify the City during its use of the land as stated in Section 3.25.

2.4 *THE CITY'S RIGHT TO STOP THE WORK*

2.4.1 If Contractor fails to carry out the Work in accordance with the Contract, or fails to correct work which is not in accordance with requirements of the Contract as required in Sections 12.1 and 12.2, the City may, by Notice of Noncompliance, order Contractor to stop the Work or any portion of the Work until the cause for the order has been eliminated. However, the right of the City to stop the Work will not give rise to a Claim for delay or to a duty on the part of the City to exercise this right for the benefit of Contractor or any other person or entity, except to the extent required by Section 6.2. If Contractor corrects the defective or nonconforming work within the time established in Notice of Noncompliance, City Engineer will give written notice to Contractor to resume performance of the Work.

2.5 *THE CITY'S RIGHT TO CARRY OUT WORK*

2.5.1 If Contractor fails to carry out work in accordance with the Contract, and fails within the period established in a Notice of Noncompliance to correct the nonconforming work, the City may, after expiration of the required period, correct the deficiencies without prejudice to other remedies the City may have, including rights of the City under Section 14.1.

2.5.1.1 When the City corrects deficiencies, City Engineer will issue an appropriate Change Order and deduct from payments then or thereafter due Contractor the cost of correcting the deficiencies, including compensation for Design Consultant's and Construction Manager's additional services and expenses made necessary by such default, neglect, or failure. This action by the City and amounts charged to Contractor are both subject to prior approval of City Engineer. If payments, then or thereafter due Contractor, are not sufficient to cover these amounts, Contractor shall pay the difference to the City.

2.5.2 Notwithstanding the City's right to carry out work, maintenance and protection of the Work remains Contractor's responsibility, as provided in the Contract.

## ARTICLE 3 - CONTRACTOR

3.1 *RESPONSIBILITIES*

3.1.1 Contractor shall maintain office with agent in the greater City of Houston area during the Contractor's performance under the Contract. Contractor shall file its street address with City Engineer.

3.1.2 Contractor and Contractor's employees shall not give or lend money or anything of value to an officer or employee of the City. Should this Paragraph 3.1.2 be violated, City Engineer may terminate the Contract under Section 14.1.

3.2 *REVIEW OF CONTRACT AND FIELD CONDITIONS BY CONTRACTOR*

3.2.1 Contractor shall carefully study and compare documents contained in the Contract with each other and with information furnished by the City pursuant to Section 2.2 and shall immediately report, in writing, any errors, inconsistencies, or omissions to City Engineer. If work is affected, Contractor shall obtain a written interpretation or clarification from City Engineer before proceeding with the affected work. However, Contractor will not be liable to the City for failure to report an error, inconsistency, or omission in the Contract unless Contractor had actual knowledge or should have had knowledge of the error, inconsistency, or omission.

3.2.2 Contractor shall take field measurements and verify field conditions, and shall carefully compare the conditions and other information known to Contractor with the Contract, before commencing activities. Contractor shall immediately report, in writing, to City Engineer for interpretation or clarification of discrepancies, inconsistencies, or omissions discovered during this process.

3.2.3 Contractor shall make a reasonable attempt to understand the Contract before requesting interpretation from City Engineer.

3.3 *SUPERVISION AND CONSTRUCTION PROCEDURES*

3.3.1 Contractor shall supervise, direct, and inspect the Work competently and efficiently, devoting the attention and applying the skills and

expertise as necessary to perform the Work in accordance with the Contract. Contractor is solely responsible and has control over construction means, methods, techniques, sequences, and procedures of construction; for safety precautions and programs in connection with the Work; and for coordinating all work under the Contract.

3.3.2 Regardless of observations or inspections by the City or City's consultants, Contractor shall perform and complete the Work in accordance with the Contract and submittals approved pursuant to Section 3.18. The City is not liable or responsible to Contractor or Surety for work performed by Contractor that is not in accordance with the Contract regardless of whether discovered during construction or after acceptance of the Work.

3.4 *SUPERINTENDENT*

3.4.1 Contractor shall employ a competent Superintendent and necessary assistants who shall be present at the site during performance of the Work. Communications given to Superintendent are binding on the Contractor.

3.4.2 Contractor shall notify City Engineer in writing of its intent to replace the Superintendent. Contractor may not replace the Superintendent if City Engineer makes a reasonable objection in writing.

3.5 *LABOR*

3.5.1 Contractor shall provide competent, qualified personnel to survey and lay out the Work and perform construction as required by the Contract. The City may, by written notice, require Contractor to remove from the Work any employee of Contractor or Subcontractors to whom City Engineer makes reasonable objection.

3.5.2 Contractor shall comply with the applicable Business Enterprise Policy set out in this Agreement and in the Supplementary Conditions, as set out in Chapter 15, Article V of the City of Houston Code of Ordinances.

3.5.3 When Original Contract Price is greater than $1,000,000, Contractor shall make Good Faith Efforts to award subcontracts or supply agreements in at least the percentages set out in the Supplementary Conditions for Business Enterprise Policy. Contractor acknowledges that it has reviewed the requirements for Good Faith Efforts on file with the City's Office of Business Opportunity and shall comply with them.

3.5.3.1 Contractor shall require written subcontracts with Business Enterprises and shall submit all disputes with Business Enterprises to voluntary mediation. Business Enterprise subcontracts complying with City Code of Ordinances Chapter 15, Article II must contain the terms set out in Subparagraph 3.5.3.2. If Contractor is an individual person, as distinguished from a corporation, partnership, or other legal entity, and the amount of the subcontract is $50,000 or less, the subcontract must also be signed by the attorneys of the respective parties.

3.5.3.2 Contractor shall ensure that subcontracts with Business Enterprise firms are clearly labeled **"THIS CONTRACT MAY BE SUBJECT TO MEDIATION ACCORDING TO THE TEXAS ALTERNATIVE DISPUTE RESOLUTION ACT"** and contain the following terms:

3.5.3.2.1 (Business Enterprise) may not delegate or subcontract more than 50 percent of work under this subcontract to any other subcontractor without the express written consent of the City's OBO Director (the "Director").

3.5.3.2.2 (Business Enterprise) shall permit representatives of the City of Houston, at all reasonable times, to perform (1) audits of the books and records of the Subcontractors and Suppliers, and (2) inspections of all places where work is to be undertaken in connection with this subcontract. (Business Enterprise) shall keep the books and records available for this purpose for at least four years after the end of its performance under this subcontract. Nothing in this provision shall affect the time for bringing a cause of action nor the applicable statute of limitations.

3.5.3.2.3 Within five business days of execution of this subcontract, Contractor and (Business Enterprise) shall designate in writing to the Director an agent for receiving any notice required or permitted to be given pursuant to Chapter 15 of the Houston City Code of Ordinances, along with the street and mailing address and phone number of the agent.

3.5.4 The requirements and terms of the City of Houston Pay or Play Program, as set out in Executive Order 1-7 and Ordinance 2007-0534, are incorporated into the Contract for all purposes. Contractor shall comply with the terms and conditions of the Pay or Play Program as they are set out at the time of City Council approval of this

agreement. IF CONTRACTOR DOES NOT PAY IN ACCORDANCE WITH THE PAY OR PLAY PROGRAM WITHIN 30 DAYS OF THE DATE CITY ENGINEEER SENDS CONTRACTOR WRITTEN NOTIFICATION, CITY CONTROLLER MAY DEDUCT FUNDS UP TO THE AMOUNT OWED FROM ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE.

3.6 *PREVAILING WAGE RATES*

3.6.1 Contractor shall comply with governing statutes providing for labor classification of wage scales for each craft or type of laborer, worker, or mechanic.

3.6.2 Prevailing wage rates applicable to the Work may be one or a combination of the following wage rates identified in Division 00:

- 3.6.2.1 Federal Wage Rate General Decisions
  - 3.6.2.1.1 Highway Rates
  - 3.6.2.1.2 Building Rates
  - 3.6.2.1.3 Heavy Construction Rates
  - 3.6.2.1.4 Residential Rates
- 3.6.2.2 City Prevailing Wage Rates
  - 3.6.2.2.1 Building Construction Rates
  - 3.6.2.2.2 Engineering Construction Rates
  - 3.6.2.2.3 Asbestos Worker Rates

3.6.3 Each week Contractor shall submit to the City's Mayor's Office of Business Opportunity certified copies of payrolls showing classifications and wages paid by Contractor, Subcontractors, and Suppliers for each employee under the Contract, for any day included in the Contract.

3.7 *LABOR CONDITIONS*

3.7.1 In the event of labor disputes affecting Contractor or Contractor's employees, Contractor shall utilize all possible means to resolve disputes in order that the Work not be delayed to any extent. These means will include seeking injunctive relief and filing unfair labor practice charges, and any other action available to Contractor.

3.7.2 When Contractor has knowledge that any actual or potential labor dispute is delaying or is threatening to delay timely performance of the Work, Contractor shall immediately notify City Engineer in writing. No Claims will be accepted by City Engineer for costs incurred as a result of jurisdictional or labor disputes.

3.8 *DRUG DETECTION AND DETERRENCE*

3.8.1 It is the policy of the City to achieve a drug-free work force and to provide a workplace that is free from the use of illegal drugs and alcohol. It is also the policy of the City that manufacture, distribution, dispensation, possession, sale, or use of illegal drugs or alcohol by contractors while on the City's premises is prohibited. By executing the Contract, Contractor represents and certifies that it meets and will comply with all requirements and procedures set forth in the Mayor's Policy on Drug Detection and Deterrence, City Council Motion No. 92-1971 ("Mayor's Policy") and the Mayor's Drug Detection and Deterrence Procedures for Contractors, Executive Order No. 1-31, (Revised) ("Executive Order"). Mayor's Policy is on file in the office of the City Secretary. Copies of Executive Order may be obtained at the location specified in the Advertisement for Bids.

3.8.1.1 The Executive Order applies to the City's contracts for labor or services except the following:

- 3.8.1.1.1 contracts authorized by Emergency Purchase Orders,
- 3.8.1.1.2 contracts in which imposition of requirements of the Executive Order would exclude all potential bidders or proposers, or would eliminate meaningful competition for the Contract,
- 3.8.1.1.3 contracts with companies that have fewer than 15 employees during any 20-week period during a calendar year and no safety impact positions,
- 3.8.1.1.4 contracts with non-profit organizations providing services at no cost or reduced cost to the public, and
- 3.8.1.1.5 contracts with federal, state, or local governmental entities.

3.8.1.2 Prior to execution of the Contract, Contractor shall have filed with the City:

- 3.8.1.2.1 a Drug Policy Compliance Agreement form (Attachment "A" to the Executive Order), and
- 3.8.1.2.2 a copy of Contractor's drug free workplace policy, and
- 3.8.1.2.3 a written designation of all safety impact positions, if applicable, or a Contractor's Certification of a No Safety Impact Positions form (Attachment "C" to the Executive Order).

3.8.1.3 Every six months during performance of the Contract and upon completion of the Contract, Contractor shall file a Drug Policy Compliance Declaration form (Attachment "B" to the Executive Order). The Contractor shall submit the Drug Policy Compliance Declaration within 30 days of expiration of each six-month period of performance and within 30 days of completion of the Contract. The first six-month period shall begin on Date of Commencement of the Work.

3.8.1.4 Contractor shall have a continuing obligation to file updated designation of safety impact positions when additional safety impact positions are added to Contractor's employee workforce during performance of the Work.

3.8.1.5 Contractor shall require its Subcontractors and Suppliers to comply with the Mayor's Policy and Executive Order. Contractor is responsible for securing and maintaining required documents from Subcontractors and Suppliers for the City inspection throughout the term of the Contract.

3.8.1.6 Failure of Contractor to comply with requirements will be a material breach of the Contract entitling the City to terminate in accordance with Section 14.1.

3.9 *MATERIALS & EQUIPMENT*

3.9.1 Unless otherwise provided in the Contract, Contractor shall provide and assume full responsibility for Products, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, transportation, temporary facilities, supplies, and other facilities and incidentals necessary for Furnishing, performing, testing, starting-up, and completing the Work.

3.9.1.1 Contractor, Subcontractors, and Suppliers shall use Ultra Low Sulfur Diesel Fuel in all diesel operating vehicles and motorized equipment utilized in performing the Work. Ultra Low Sulfur Diesel Fuel is defined as diesel fuel having 15 ppm or the applicable standard set by state or federal law or rules and regulations of the Texas Commission on Environmental Quality, or the Environmental Protection Agency, whichever is less in sulfur content. Off-road Ultra Low Sulfur Diesel Fuel may be used in lieu of on-road Ultra Low Sulfur Diesel Fuel. Contractor shall provide, upon request by City Engineer, proof that Contractor, Subcontractors, and Suppliers are using Ultra Low Sulfur Diesel Fuel.

3.9.2 Contractor shall provide Products that are:

3.9.2.1 new, unless otherwise required or permitted by the Contract, and

3.9.2.2 of specified quality.

If required by City Engineer, Contractor shall furnish satisfactory evidence, including reports of required tests, as to kind and quality of Products.

3.9.3 Contractor shall store Products in a safe, neat, compact, and protected manner. Contractor shall also store Products delivered during the work, along the right-of-way:

3.9.3.1 so as to cause the least inconvenience to property owners, tenants, and general public; and

3.9.3.2 so as not to block access to, or be closer than, three feet to any fire hydrant.

Contractor shall protect trees, lawns, walks, drives, streets, and other improvements that are to remain, from damage. If private or public property is damaged by Contractor, Contractor shall, at its sole expense, restore the damaged property to at least its original condition.

3.9.3.1 Contractor shall obtain City Engineer's approval for storage areas used for Products for which payment has been requested under Paragraph 9.6.1. Contractor shall provide the City access to the storage areas for inspection purposes. Products, once paid for by the City, become the property of the City and may not be removed from place of storage, without City Engineer's written permission except for a movement to the site. Contractor's Installation Floater, required under Section 11.2, shall cover all perils, including loss or damage to Products during storage, loading, unloading, and transit to the site.

3.10 *PRODUCT OPTIONS AND SUBSTITUTIONS*

3.10.1 For Products specified by reference standards or by description only, Contractor may provide any Product meeting those standards or description.

3.10.2 For Products specified by naming one or more manufacturers with provision for substitutions or equal, Contractor may submit a request for substitution for any manufacturer not named.

3.10.3 City Engineer will consider requests for substitutions only within the first 15 percent of Contract Time, or first 90 days after date of Notice to Proceed, whichever is less.

3.10.4 Contractor shall document each request for substitution with complete data

substantiating compliance of proposed substitution with the Contract.

3.10.5 A request for substitution constitutes a representation that Contractor:

3.10.5.1 has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified Product;

3.10.5.2 shall provide the same warranty for the substitution as for the specified Product;

3.10.5.3 shall coordinate installation of the proposed substitution and make changes to other work which may be required for the Work to be completed, with no additional cost or increase in time to the City;

3.10.5.4 confirms that cost data is complete and includes all related costs under the Contract;

3.10.5.5 waives Claim for additional costs or time extensions that may subsequently become apparent; and

3.10.5.6 shall provide review or redesign services by a design consultant with appropriate professional license and shall obtain re-approval and permits from authorities.

3.10.6 City Engineer will not consider and will not approve substitutions when:

3.10.6.1 they are indicated or implied on Shop Drawing or Product Data submittals without separate written request; or

3.10.6.2 acceptance will require revision to the Contract.

3.10.7 City Engineer may reject requests for substitution, and his decision will be final and binding on the Parties.

3.11 *CASH ALLOWANCES*

3.11.1 Contract Price includes Cash Allowances as identified in the Contract.

3.11.2 The City will pay the actual costs of Cash Allowance item exclusive of profit, overhead or administrative costs. If actual costs exceed the Cash Allowance, City Engineer must approve a Change Order for the additional costs.

3.12 *WARRANTY*

3.12.1 Contractor warrants to the City that Products furnished under the Contract are:

3.12.1.1 free of defects in title;

3.12.1.2 of good quality; and

3.12.1.3 new, unless otherwise required or permitted by the Contract.

If required by the City Engineer, Contractor shall furnish satisfactory evidence as to kind, quality and title of Products, and that Products conform to requirements of the Contract.

3.12.2 In the event of a defect in a Product, either during construction or warranty period, Contractor shall take appropriate action with manufacturer of Product to assure correction or replacement of defective Product with minimum delay.

3.12.3 Contractor warrants that the Work is free of defects not inherent in the quality required or permitted, and that the Work does conform with the requirements of the Contract. Contractor further warrants that the Work has been performed in a thorough and workmanlike manner.

3.12.4 Contractor warrants that the Work is free of concentrations on polychlorinated biphenyl (PCB) and other substances defined as hazardous by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or any other applicable law or regulation.

3.12.5 Work not conforming to requirements of Section 3.12, including substitutions not properly approved and authorized, may be considered nonconforming work.

3.12.6 Contractor's warranty excludes remedy for damage or defect caused by:

3.12.6.1 improper or insufficient maintenance by the City;

3.12.6.2 normal wear and tear under normal usage; or

3.12.6.3 claim that hazardous material was incorporated into the Work, if that material was specified in the Contract.

3.12.7 Contractor warrants that title to all work covered by Contractor's request for payment passes to the City upon incorporation into the Work or upon Contractor's receipt of payment, whichever occurs first. The Contractor further warrants that the title is free of all liens, claims, security interests or other interests ("Encumbrances"). If not, upon written demand from City Engineer, Contractor shall immediately take legal action necessary to remove Encumbrances.

3.13 *TAXES*

3.13.1 Contractor shall pay all sales, consumer, use, and similar taxes, which are in effect or scheduled to go into effect on or before bids are received, related to work provided by Contractor.

3.13.2 Contractor shall obtain, and require Subcontractors and Suppliers to obtain, necessary permits from the state and local taxing authorities to perform contractual obligations under the Contract, including sales tax permits.

3.13.3 The City is exempt from the Federal Transportation and Excise Tax. Contractor shall comply with federal regulations governing the exemptions.

3.13.4 Products incorporated into the Work are exempt from state sales tax according to provisions of the TEX. TAX CODE ANN. CH. 151, Subsection H.

3.14 *PERMITS, FEES, AND NOTICES*

3.14.1 Unless otherwise provided in the Contract, Contractor shall secure and pay for all construction permits, licenses, and inspections:

3.14.1.1 necessary for proper execution and completion of the Work; and

3.14.1.2 legally required at time bids are received.

3.15 *CONSTRUCTION SCHEDULES*

3.15.1 On receipt of Notice to Proceed, Contractor shall promptly prepare and submit construction schedule for the Work for City Engineer's review. The schedule must reflect the minimum time required to complete the Work not to exceed Contract Time.

3.15.2 Contractor shall give 24-hour written notice to City Engineer before commencing work or resuming work where work has been stopped. Contractor shall also give the same notice to inspectors.

3.15.3 Contractor shall incorporate milestones specified in Summary of Work Specification into the construction schedule. Contractor's failure to meet a milestone, as determined by City Engineer, may be considered a material breach of the Contract.

3.15.4 Each month, Contractor shall submit to City Engineer a copy of an updated construction schedule indicating actual progress, incorporating applicable changes, and indicating courses of action required to assure completion of the Work within Contract Time.

3.15.5 Contractor shall keep a current schedule of submittals that coordinates with the construction schedule, and shall submit the initial schedule of submittals to City Engineer for approval.

3.16 *DOCUMENTS AND SAMPLES AT THE SITE*

3.16.1 Contractor shall maintain at the site, and make available to City Engineer, one record copy of Drawings, Specifications, and Modifications. Contractor shall maintain the documents in good order and marked currently to record changes and selections made during construction. In addition, Contractor shall maintain at the site, approved Shop Drawings, Product Data, Samples, and similar submittals, which will be delivered to City Engineer prior to final inspection as required in Paragraph 9.11.4.

3.16.2 Contractor shall maintain all books, documents, papers, accounting records, and other relevant documentation pursuant to the Work and shall make the books, documents, papers, and accounting records available to representatives of the City for review and audits during the Contract term and for the greater of three years following Date of Substantial Completion or until all litigation or audits are fully resolved.

3.16.3 Contractor shall provide to City Attorney all documents and records that City Attorney deems necessary to assist in determining Contractor's compliance with the Contract, with the exception of those documents made confidential by federal or state law or regulation.

3.17 *MANUFACTURER'S SPECIFICATIONS*

3.17.1 Contractor shall handle, store, and Install Products and perform all work in the manner required by Product manufacturer. Should the Contract and manufacturer's instructions conflict, Contractor shall report conflict to City Engineer for resolution prior to proceeding with the affected work.

3.17.2 References in the Contract to the manufacturer's specifications, directions, or recommendations, mean manufacturer's current published documents in effect as of date of receipt of bids, or in the case of a Modification, as of date of Modification.

*3.18 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES*

3.18.1 Shop Drawings, Product Data, and Samples are not part of the Contract. The purpose of Contractor submittals is to demonstrate, for those portions of the Work for which submittals are required, the way Contractor proposes to conform to information given and design concept expressed in the Contract.

3.18.2 Contractor shall submit to Project Manager for review the Shop Drawings, Product Data, and Samples, which are required by the Contract. Review by Project Manager is subject to limitations of Paragraph 4.1.4. Contractor shall transmit the submittals to the Project Manager with reasonable promptness and in a sequence, so as to cause no delay in the Work or in activities of the City or of separate contractors. Contractor shall transmit submittals in time to allow a minimum of 30 days for Project Manager's review prior to date Contractor needs reviewed submittals returned. This time may be shortened for a particular job requirement if approved by Project Manager in advance of submittal.

3.18.3 Contractor shall certify that the content of submittals conforms to the Contract without exception by affixing Contractor's approval stamp and signature. By certifying and submitting Shop Drawings, Product Data, and Samples, Contractor represents, and Contractor's stamp of approval shall state, that Contractor has determined and verified materials, quantities, field measurements, and field construction criteria related to the submittal, and has checked and coordinated information contained within the submittals with requirements of the Contract.

3.18.4 Contractor may not perform any work requiring submittal and review of Shop Drawings, Product Data, or Samples until the submittal has been returned with appropriate review decision by the Project Manager. Contractor shall perform work in accordance with the review.

3.18.5 If Contractor performs any work requiring submittals prior to review and acceptance of the submittals by Project Manager, such work is at Contractor's risk and the City is not obligated to accept work if the submittals are later found to be unacceptable.

3.18.6 If, in the opinion of Project Manager, the submittals are incomplete, or demonstrate an inadequate understanding of the Work or lack of review by the Contractor, then submittals may be returned to the Contractor for correction and resubmittal.

3.18.7 Contractor shall direct specific attention in writing and on the resubmitted Shop Drawings, Product Data, or Samples to any additional proposed revisions, other than those revisions requested by Project Manager on previous submittals.

3.18.8 Contractor is not relieved of responsibility for deviations from requirements of the Contract by Project Manager's review of Shop Drawings, Product Data, or Samples unless Contractor has specifically informed Project Manager in writing of the deviation at the time of the submittal, and Project Manager has given written approval of the deviation.

3.18.9 When professional certification of performance criteria of Products is required by the Contract, the City may rely upon accuracy and completeness of the calculations and certifications.

3.18.10 For Product colors or textures to be selected by the City, Contractor shall submit all samples together to allow preparation of a complete selection schedule.

3.18.11 Contractor shall submit informational submittals, on which Project Manager is not expected to take responsive action, as required by the Contract.

3.18.12 Submittals made by Contractor which are not required by the Contract may be returned to Contractor without action.

*3.19 CULTURAL RESOURCES AND ENDANGERED SPECIES*

3.19.1 Contractor may not remove or disturb, or cause to be removed or disturbed, any historical, archaeological, architectural, or other cultural artifacts, relics, vestiges, remains, or objects of antiquity. If Contractor discovers one of these items, Contractor shall immediately notify City Engineer and further comply with the requirements of 13 Tex. Admin. Code Chs. 25 and 26 (2002), or successor regulation. Contractor shall protect site and cultural resources from further disturbance until professional examination can be made or until clearance to proceed is authorized in writing by City Engineer.

3.19.2 Should either threatened or endangered plant or animal species be encountered,

Contractor shall cease work immediately in the area of encounter and notify City Engineer.

3.20 *CUTTING AND PATCHING*

3.20.1 Contractor is responsible for necessary cutting, fitting, and patching to accomplish the Work and shall suitably support, anchor, attach, match, and trim or seal materials to work of other contractors. Contractor shall coordinate the Work with work of other contractors to minimize conflicts, as provided in Article 6.

3.20.2 Contractor may not endanger work by cutting, digging, or other action, and may not cut or alter work of other contractors except by written consent of City Engineer and affected contractor.

3.21 *CLEANING*

3.21.1 Contractor shall perform daily cleanup of all dirt, debris, scrap materials and other disposable items resulting from Contractor's operations, whether on-site or off-site. Unless otherwise authorized in writing by City Engineer, Contractor shall keep all streets, access streets, driveways, areas of public access, walkways, and other designated areas clean and open at all times.

3.21.2 Failure of Contractor to maintain a clean site, including access streets, is the basis for City Engineer to issue a Notice of Noncompliance. Should compliance not be attained within the time period in the Notice of Noncompliance, City Engineer may authorize necessary cleanup to be performed by others and the cost of the cleanup will be deducted from monies due Contractor.

Contractor shall legally dispose off-site, all waste materials and other excess materials resulting from Contractor's operations.

3.22 *SANITATION*

3.22.1 Contractor shall provide and maintain sanitary facilities at site for use of all construction forces under the Contract. Newly-constructed or existing sanitary facilities may not be used by Contractor.

3.23 *ACCESS TO WORK AND TO INFORMATION*

3.23.1 Contractor shall provide the City, Design Consultant, testing laboratories, and governmental agencies which have jurisdictional interests, access to the Work in preparation and in progress wherever located. Contractor shall provide proper and safe conditions for the access.

3.23.2 If required by City Engineer, Contractor shall furnish information concerning character of Products and progress and manner of the Work, including information necessary to determine cost of the Work, such as number of employees, pay of employees, and time employees worked on various classes of the Work.

3.24 *TRADE SECRETS*

3.24.1 Contractor will not make any claim of ownership of trade secrets as to products used in the Work, or preparation of any mixture for the Work. City Engineer will at all times have the right to demand and Contractor shall furnish information concerning materials or samples of ingredients of any materials used, or proposed to be used, in preparation of concrete placed or other work to be done. Mixtures, once agreed on, shall not be changed in any manner without knowledge and consent of City Engineer. The City will make its best efforts to protect confidentiality of proprietary information.

3.25 *INDEMNIFICATION*

3.25.1 CONTRACTOR AGREES TO AND SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") HARMLESS FOR ALL CLAIMS, CAUSES OF ACTION, LIABILITIES, FINES, AND EXPENSES (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS AND INTEREST) FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THE CONTRACT INCLUDING, WITHOUT LIMITATION, THOSE CAUSED BY:

3.25.1.1 CONTRACTOR'S AND/OR ITS AGENTS', EMPLOYEES', OFFICERS', DIRECTORS', CONTRACTORS', OR SUBCONTRACTORS' (COLLECTIVELY IN NUMBERED SUBPARAGRAPHS .1 through .3, "CONTRACTOR") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS;

3.25.1.2 THE CITY'S AND CONTRACTOR'S ACTUAL OR ALLEGED CONCURRENT NEGLIGENCE, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT;

3.25.1.3 THE CITY'S AND CONTRACTOR'S ACTUAL OR ALLEGED STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT.

CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY HARMLESS DURING THE TERM OF THE CONTRACT AND FOR FOUR YEARS AFTER THE CONTRACT TERMINATES. CONTRACTOR SHALL NOT INDEMNIFY THE CITY FOR THE CITY'S SOLE NEGLIGENCE.

3.25.2 NOTWITHSTANDING ANYTHING TO THE CONTRARY, THE LIABILITY OF CONTRACTOR FOR THE CITY'S CONCURRENT NEGLIGENCE SHALL NOT EXCEED $1,000,000.

3.26 *RELEASE AND INDEMNIFICATION – PATENT, COPYRIGHT, TRADEMARK, AND TRADE SECRET INFRINGEMENT*

3.26.1 UNLESS OTHERWISE SPECIFICALLY REQUIRED BY THE CONTRACT, CONTRACTOR AGREES TO AND SHALL RELEASE AND DEFEND, INDEMNIFY, AND HOLD HARMLESS THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") FROM ALL CLAIMS OR CAUSES OF ACTION BROUGHT AGAINST THE CITY BY ANY PARTY, INCLUDING CONTRACTOR, ALLEGING THAT THE CITY'S USE OF ANY EQUIPMENT, SOFTWARE, PROCESS, OR DOCUMENTS CONTRACTOR FURNISHES DURING THE TERM OF THE CONTRACT INFRINGES ON A PATENT, COPYRIGHT, OR TRADEMARK, OR MISAPPROPRIATES A TRADE SECRET. CONTRACTOR SHALL PAY ALL COSTS (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS, AND INTEREST) AND DAMAGES AWARDED.

3.26.2 CONTRACTOR SHALL NOT SETTLE ANY CLAIM ON TERMS WHICH PREVENT THE CITY FROM USING THE EQUIPMENT, SOFTWARE, PROCESS, OR PRODUCT WITHOUT THE CITY ENGINEER'S PRIOR WRITTEN CONSENT.

3.26.3 UNLESS OTHERWISE SPECIFICALLY REQUIRED BY THE CONTRACT, WITHIN 60 DAYS AFTER BEING NOTIFIED OF THE CLAIM, CONTRACTOR SHALL, AT ITS OWN EXPENSE, EITHER:

3.26.3.1 OBTAIN FOR THE CITY THE RIGHT TO CONTINUE USING THE EQUIPMENT, SOFTWARE, PROCESS, OR PRODUCT, OR

3.26.3.2 IF BOTH PARTIES AGREE, REPLACE OR MODIFY THEM WITH COMPATIBLE AND FUNCTIONALLY EQUIVALENT PRODUCTS.

IF NONE OF THESE ALTERNATIVES IS REASONABLY AVAILABLE, THE CITY MAY RETURN THE EQUIPMENT, SOFTWARE, OR PRODUCT, OR DISCONTINUE THE PROCESS, AND CONTRACTOR SHALL REFUND THE PURCHASE PRICE.

3.27 *INDEMNIFICATION PROCEDURES*

3.27.1 *Notice of Indemnification Claims:* If the City or Contractor receives notice of any claim or circumstances which could give rise to an indemnified loss, the receiving party shall give written notice to the other Party within 10 days. The notice must include the following:

3.27.1.1 a description of the indemnification event in reasonable detail,

3.27.1.2 the basis on which indemnification may be due, and

3.27.1.3 the anticipated amount of the indemnified loss.

This notice does not estop or prevent the City from later asserting a different basis for indemnification or a different amount of indemnified loss than that indicated in the initial notice. If the City does not provide this notice within the 10-day period, it does not waive any right to indemnification except to the extent that Contractor is prejudiced, suffers loss, or incurs expense because of the delay.

3.27.2 *Defense of Indemnification Claims:*

3.27.2.1 *Assumption of Defense:* Contractor may assume the defense of the claim at its own expense with counsel chosen by it that is reasonably satisfactory to the City. Contractor shall then control the defense and any negotiations to settle the claim. Within 10 days after receiving written notice of the indemnification request, Contractor must advise the City as to whether or not it will defend the claim. If Contractor does not assume the defense, the City shall assume and control the defense, and all defense expenses constitute an indemnified loss.

3.27.2.2 *Continued Participation:* If Contractor elects to defend the claim, the City may

retain separate counsel to participate in, but not control, the defense and to participate in, but not control, any settlement negotiations. Contractor may settle the claim without the consent or agreement of the City, unless it:

3.27.2.2.1 would result in injunctive relief or other equitable remedies or otherwise require the City to comply with restrictions or limitations that adversely affect the City;

3.27.2.2.2 would require the City to pay amounts that Contractor does not fund in full; or

3.27.2.2.3 would not result in the City's full and complete release from all liability to the plaintiffs or claimants who are parties to or otherwise bound by the settlement.

**3.28** ***CONTRACTOR DEBT***

**IF CONTRACTOR, AT ANY TIME DURING THE TERM OF THIS AGREEMENT, INCURS A DEBT, AS THE WORD IS DEFINED IN SECTION 15-122 OF THE HOUSTON CITY CODE OF ORDINANCES, IT SHALL IMMEDIATELY NOTIFY CITY CONTROLLER IN WRITING. IF CITY CONTROLLER BECOMES AWARE THAT CONTRACTOR HAS INCURRED A DEBT, IT SHALL IMMEDIATELY NOTIFY CONTRACTOR IN WRITING. IF CONTRACTOR DOES NOT PAY THE DEBT WITHIN 30 DAYS OF EITHER SUCH NOTIFICATION, CITY CONTROLLER MAY DEDUCT FUNDS IN AN AMOUNT EQUAL TO THE DEBT FROM ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE THEREFOR. CONTRACTOR SHALL FILE A NEW AFFIDAVIT OF OWNERSHIP, USING THE FORM DESIGNATED BY CITY, BETWEEN FEBRUARY 1 AND MARCH 1 OF EVERY YEAR DURING THE TERM OF THE CONTRACT.**

## ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 *CONTRACT ADMINISTRATION*

4.1.1 City Engineer. will provide administration of the Contract and City Engineer is authorized to issue Change Orders, Work Change Directives, and Minor Changes in the Work.

4.1.2 City Engineer may act through Project Manager, Design Consultant, or Inspector. When the term "City Engineer" is used in the Contract, action by City Engineer is required unless City Engineer delegates his authority in writing. The City Engineer may not delegate authority to render decisions under Section 4.4.

The City does not have control over or charge of, and is not responsible for, supervision, construction, and safety procedures enumerated in Section 3.3. The City does not have control over or charge of and is not responsible for acts or omissions of Contractor, Subcontractors, or Suppliers.

4.1.3 The City and Design Consultant may attend project meetings and visit the site to observe progress and quality of the Work. The City and Design Consultant are not required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work.

4.1.4 Project Manager will review and approve or take other appropriate action on Contractor's submittals, but only for limited purpose of checking for conformance with information given and design concept expressed in the Contract.

4.1.5 Project Manager's review of the submittals is not conducted for purpose of determining accuracy and completeness of other details, such as dimensions and quantities, or for substantiating instructions for installation or performance of Products, all of which remain the responsibility of Contractor.

4.1.6 Project Manager's review of submittals does not relieve Contractor of its obligations under Sections 3.3, 3.12, and 3.18. Review does not constitute approval of safety precautions or, unless otherwise specifically stated by Project Manager in writing, of construction means, methods, techniques, sequences, or procedures. Project Manager's review of a specific item does not indicate approval of an assembly of which the item is a component.

4.1.7 Based on field observations and evaluations, Project Manager will process Contractor's progress payments, certify amounts due Contractor, and issue Certificates for Payment in the amount certified.

4.1.8 Project Manager will receive and forward to City Engineer for his review and records, written warranties and related documents required by the Contract and assembled by Contractor.

4.1.9 Upon written request by Contractor or Project Manager, City Engineer will resolve matters of interpretation of or performance of the Contract, which are not Claims. City Engineer's decisions are final and binding on the Parties.

4.1.10 City Engineer may reject work which does not conform to the Contract.

4.1.11 When City Engineer considers it necessary to implement the intent of the Contract, City Engineer may require additional inspection or testing of work in accordance with Paragraphs 13.6.3 and 13.6.4, whether such work is fabricated, Installed, or completed.

4.2 *COMMUNICATIONS IN ADMINISTRATION OF THE CONTRACT*

4.2.1 Except as otherwise provided in the Contract or when authorized by City Engineer in writing, Contractor shall communicate with Project Manager. Contractor shall communicate with Design Consultant, Design Consultant's subconsultants, and separate contractors through Project Manager. The City will communicate with Subcontractors and Suppliers through Contractor.

4.3 *CLAIMS AND DISPUTES*

4.3.1 *Documentation by Project Manager:* Contractor shall submit Claims, including those alleging an error or omission by Project Manager or Design Consultant, to Project Manager for documentation and recommendation to City Engineer.

4.3.2 *Decision of City Engineer:* Upon submission of Claim by Project Manager or Contractor, City Engineer will resolve Claims in accordance with Section 4.4.

4.3.3 *Time Limits on Claims:* Claims by Contractor must be made within 90 days after occurrence of event giving rise to the Claim.

4.3.4 *Continuing the Contract Performance:* Pending final resolution of a Claim including referral to non-binding mediation, unless otherwise agreed in writing, Contractor shall proceed diligently with the performance of the Contract and the City will continue to make payments in accordance with the Contract.

4.3.4.1 Pending final resolution of a Claim including referral to non-binding mediation, Contractor is responsible for safety and protection of physical properties and conditions at site.

4.3.5 *Claims for Concealed or Unknown Conditions:* Concealed or unknown physical conditions include utility lines, other man-made structures, storage facilities, Pollutants and Pollutant Facilities, and the like, but do not include conditions arising from Contractor operations, or failure of Contractor to properly protect and safeguard subsurface facilities. Concealed conditions also include naturally-occurring soil conditions outside the range of soil conditions identified through geotechnical investigations, but do not include conditions arising from groundwater, rain, or flood.

4.3.5.1 If conditions are encountered at the site which are Underground Facilities or otherwise concealed or unknown conditions which differ materially from:

4.3.5.1.1 those indicated by the Contract; or

4.3.5.1.2 conditions which Contractor could have discovered through site inspection, geotechnical testing, or otherwise;

then Contractor will give written notice to City Engineer no later than five days after Contractor's first observation of the condition and before condition is disturbed. Contractor's failure to provide notice constitutes a waiver of a Claim.

4.3.5.2 City Engineer will promptly investigate concealed or unknown conditions. If City Engineer determines that conditions at the site are not materially different and that no change in Contract Price or Contract Time is justified, City Engineer will notify Contractor in writing, stating reasons. If City Engineer determines the conditions differ materially and cause increase or decrease in Contractor's cost or time required for performance of part of the Work, City Engineer will recommend an adjustment in Contract Price or Contract Time, or both, as provided in Article 7. Opposition by a Party to the City Engineer's determination must be made within 21 days after City Engineer has given notice of the decision. If the Parties cannot agree on adjustment to Contract Price or Contract Time, adjustment is subject to further proceedings pursuant to Section 4.4.

4.3.6 *Claims for Additional Cost:* If Contractor wishes to make a Claim for increase in Contract Price, Contractor shall give written notice before proceeding with work for which Contractor intends to submit a Claim. Prior notice is not required for Claims relating to an emergency

endangering life or property arising under Section 10.4.

4.3.6.1 Contractor may file a Claim in accordance with Section 4.4 if Contractor believes it has incurred additional costs, for the following reasons:

- 4.3.6.1.1 written interpretation of City Engineer;
- 4.3.6.1.2 order by City Engineer to stop the Work when Contractor is not at fault;
- 4.3.6.1.3 suspension of the Work by City Engineer;
- 4.3.6.1.4 termination of the Contract by City Engineer; or
- 4.3.6.1.5 The City's non-compliance with another provision of the Contract.

4.3.6.2 No increase in Contract Price is allowed for delays or hindrances to the Work, except for direct and unavoidable extra costs to Contractor caused by failure of the City to provide information and services, or to make land and materials available, when required of the City under the Contract. Any increase claimed is subject to the provisions of Section 4.4 and Article 7.

4.3.6.3 The City is not liable for Claims for delay when Date of Substantial Completion occurs prior to expiration of Contract Time.

4.3.7 *Claims for Additional Time:* If Contractor wishes to make a Claim for an increase in Contract Time, Contractor shall give written notice as provided in Section 8.2. In case of continuing delay, only one Claim is necessary.

4.4 *RESOLUTION OF CLAIMS AND DISPUTES*

4.4.1 City Engineer will review Claims and take one or more of the following preliminary actions within 30 days of receipt of Claim:

- 4.4.1.1 submit a suggested time to meet and discuss the Claim with City Engineer;
- 4.4.1.2 reject Claim, in whole or in part, stating reasons for rejection;
- 4.4.1.3 recommend approval of the Claim by the other Party;
- 4.4.1.4 suggest a compromise; or
- 4.4.1.5 take other actions as City Engineer deems appropriate to resolve the Claim.

4.4.2 City Engineer may request additional supporting data from claimant. Party making Claim shall, within 10 days after receipt of City Engineer's request, submit additional supporting data requested by City Engineer.

4.4.3 At any time prior to rendering a written decision regarding a Claim, City Engineer may refer Claim to non-binding mediation. If Claim is resolved, City Engineer will prepare and obtain all appropriate documentation. If Claim is not resolved, City Engineer will take receipt of Claim and begin a new review under Section 4.4.

4.4.4 If Claim is not referred to or settled in non-binding mediation, City Engineer may conduct a hearing and will render a written decision, including findings of fact, within 75 days of receipt of Claim, or a time mutually agreed upon by the Parties in writing. City Engineer may notify Surety and request Surety's assistance in resolving Claim. City Engineer's decision is final and binding on the Parties.

4.5 *CONDITION PRECEDENT TO SUIT; WAIVER OF ATTORNEY FEES AND INTEREST*

4.5.1 Neither the City nor Contractor may recover attorney fees for any claim brought in connection with this Contract.

4.5.2 Neither the City nor the Contractor may recover interest for any damages claim brought in connection with this Contract except as allowed by TEXAS LOCAL GOVERNMENT CODE Chapter 2251.

4.6 *INTERIM PAYMENT WAIVER & RELEASE*

4.6.1 In accordance with section 4.3, the Contractor shall use due diligence in the discovery and submission of any Claim against the City related to the Contractor's work.

4.6.2 The Contractor shall submit any Claim to the City not later than the 90th day after the occurrence of the event giving rise to the Claim.

4.6.3 Any failure to timely comply with the requirements of section 4.6.2 waives and releases any Claim when the Contractor submits an application for payment after the 90th day.

4.6.4 This waiver does not cover any retainage. In case of any conflict of law, this language shall be revised to the minimum extent necessary to avoid legal conflict. This waiver is made specifically for the benefit of the City.

## ARTICLE 5 - SUBCONTRACTORS AND SUPPLIERS

### 5.1 *AWARD OF SUBCONTRACTS OTHER CONTRACTS FOR PORTIONS OF THE WORK*

5.1.1 Contractor may not contract with a Subcontractor, Supplier, person, or entity that City Engineer has made a reasonable and timely objection to.

5.1.2 If City Engineer has a reasonable objection to person or entity proposed by Contractor, Contractor shall propose another with whom City Engineer has no reasonable objection.

5.1.3 Contractor shall execute contracts with approved Subcontractors, Suppliers, persons, or entities before the Subcontractors or Suppliers begin work under the Contract. All such contracts must be executed and sent to the OBO Director and Contracting Department within 30 days after the date of the Notice to Proceed and must include provisions set forth in Articles 3 and 5 of this Document.

5.1.4 Contractor shall notify City Engineer in writing of any proposed change of Subcontractor, Supplier, person, or entity previously accepted by the City.

5.1.5 Contractor shall make timely payments to Subcontractors and Suppliers for performance of the Contract. Contractor shall protect, defend, and indemnify the City from any claim or liability arising out of Contractor's failure to make the payments. Disputes relating to payment of Business Enterprise Subcontractors or Suppliers will be submitted to arbitration in same manner as other disputes under Business Enterprise subcontracts. Failure of Contractor to comply with decisions of arbitrator may be determined by City Engineer a material breach leading to termination of the Contract.

### 5.2 *CONTRACTOR RESPONSIBILITY FOR SUBCONTRACTORS*

5.2.1 Contractor is responsible to the City, as may be required by laws and regulations, for all acts and omissions of Subcontractors, Suppliers, and other persons and organizations performing or furnishing any of the Work under direct or indirect contract with Contractor.

5.2.2 Contractor shall make available to each proposed Subcontractor, prior to execution of subcontract, copies of the Contract to which Subcontractor is bound by this Section 5.2. Contractor shall notify Subcontractor of any terms of proposed subcontract which may be at variance with the Contract.

5.2.3 The City's approval of Subcontractor or Suppliers does not relieve Contractor of its obligation to perform, or to have performed to the full satisfaction of the City, the Work required by the Contract.

5.2.4 Unless there is a contractual relationship between Contractor and a Subcontractor or Supplier to the contrary, Contractor shall withhold no more retainage from Subcontractors or Suppliers than City withholds from Contractor under this Agreement. However, once a Subcontractor or Supplier completes performance, Contractor shall release all retainage to that Subcontractor or Supplier regardless if City continues to retain under this Agreement.

5.2.5 Prior to a Subcontractor or Supplier commencing performance for Contractor, Contractor shall meet with that Subcontractor or Supplier to provide instructions on invoicing procedures, dispute resolution procedures, and statutory rights, such as claim filing procedures under the McGregor Act. Subcontractors and Suppliers must certify to the City Engineer that Contractor has fulfilled the requirements of this Section.

## ARTICLE 6 - CONSTRUCTION BY THE CITY OR BY SEPARATE CONTRACTORS

### 6.1 *THE CITY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS*

6.1.1 The City may perform on-site construction operations related to the Work and as part of the Project with the City's workforce or with separate contractors.

### 6.2 *COORDINATION*

6.2.1 The City will coordinate activities of the City's workforce and of each separate contractor with work of Contractor, and Contractor shall cooperate with the City and separate contractors.

6.2.1.1 Contractor shall participate with other separate contractors and the City in reviewing their construction schedules when directed to do so by the Project Manager. Contractor shall make revisions to construction schedule and Contract Price deemed

necessary after joint review and mutual agreement. Construction schedules shall then constitute schedules to be used by Contractor, separate contractors, and the City, until subsequently revised.

6.2.2 Contractor shall afford to the City and to separate contractors reasonable opportunity for introduction and storage of their materials and equipment, and for performance of their activities.

6.2.3 If part of Contractor's work depends on proper execution of construction or operations by the City or a separate contractor, Contractor shall, prior to proceeding with that portion of the Work, inspect the other work and promptly report to City Engineer apparent discrepancies or defects in the other construction that would render it unsuitable for the proper execution of the Work. Failure of Contractor to report apparent discrepancies or defects in the other construction shall constitute acknowledgment that the City's or separate contractor's completed or partially completed construction is fit and proper to receive Contractor's work, except as to discrepancies or defects not then reasonably discoverable.

6.3 *MUTUAL RESPONSIBILITY*

6.3.1 The responsible party bears the costs caused by delays, by improperly timed activities, or by nonconforming construction.

6.3.2 Contractor shall promptly remedy damage caused by Contractor to completed or partially completed construction or to property of the City or separate contractor.

6.3.3 Claims or disputes between Contractor and other City contractors, or subcontractors of other City contractors, working on the Project must be submitted to binding arbitration in accordance with Construction Industry Arbitration Rules of the American Arbitration Association upon demand by any party to the dispute or by the City.

6.4 *THE CITY'S RIGHT TO CLEAN UP*

6.4.1 If dispute arises among Contractor, separate contractors, and the City as to responsibility under their respective contracts for maintaining premises and surrounding area free from waste materials and rubbish as described in Section 3.21, the City may clean up and allocate cost among those responsible, as determined by City Engineer.

## ARTICLE 7 - CHANGES IN THE WORK

7.1 *CHANGES*

7.1.1 Changes in scope of the Work, subject to limitations in Article 7 and elsewhere in the Contract, may be accomplished without invalidating the Contract, or without notifying Surety by:

7.1.1.1 Change Order;
7.1.1.2 Work Change Directive; or
7.1.1.3 Minor Change in the Work.

7.1.2 The following types of Change Orders require City Council approval:

7.1.2.1 a single Change Order that exceeds five percent of Original Contract Price,
7.1.2.2 a Change Order which, when added to previous Change Orders, exceeds five percent of Original Contract Price,
7.1.2.3 a Change Order, in which the total value of increases outside of the general scope of work approved by City Council, when added to increases outside the general scope of work approved by City Council in previous Change Orders, exceeds 40 percent of the Original Contract Price, even if the net increase to the Original Contract Price is five percent or less.

In this context, "increase" means an increase in quantity resulting from the addition of locations not within the scope of work approved by City Council, or the addition of types of goods or services not bid as unit price items.

Nothing in this Section is intended to permit an increase of the Contract Price in excess of the limit set out in TEX. LOC. GOV'T CODE ANN. §252.048 or its successor statute.

7.1.3 Contractor shall proceed promptly to execute changes in the Work provided in Modifications, unless otherwise stated in the Modification.

7.2 *WORK CHANGE DIRECTIVES*

7.2.1 A Work Change Directive cannot change Contract Price or Contract Time, but is evidence that the Parties agree that a change, ordered by directive, will be incorporated in a subsequently issued Change Order as to its effect, if any, on Contract Price or Contract Time.

7.2.2 Failure by Contractor to commence work identified in a Work Change Directive within the time specified by City Engineer, or to complete the

work in a reasonable period of time, may be determined by City Engineer to be a material breach of Contract.

7.2.3 A Work Change Directive is used in the absence of total agreement of the terms of a Change Order. Interim payments are made in accordance with Paragraph 9.6.1.

7.2.4 If Contractor signs a Work Change Directive, then Contractor agrees to its terms including adjustment in Contract Price and Contract Time or method for determining them. Agreement by the Parties to adjustments in Contract Price and Contract Time are immediately recorded as a Change Order.

7.2.5 City Engineer, by Work Change Directive, may direct Contractor to take measures as necessary to expedite construction to achieve Date of Substantial Completion on or before expiration of Contract Time. When the Work is expedited solely for convenience of the City and not due to Contractor's failure to prosecute timely completion of the Work, then Contractor is entitled to an adjustment in Contract Price equal to actual costs determined in accordance with Article 7.

7.3 *ADJUSTMENTS IN CONTRACT PRICE*

7.3.1 Adjustments in Contract Price are accomplished by Change Order and are based on one of the following methods:

- 7.3.1.1 mutual acceptance of fixed price, properly itemized and supported by sufficient data to permit evaluation;
- 7.3.1.2 unit prices stated in the Contract or subsequently agreed upon;
- 7.3.1.3 cost to be determined in a manner agreed upon by the Parties and mutually acceptable fixed or percentage fee; or
- 7.3.1.4 as provided in Paragraph 7.3.2.

7.3.2 If Contractor does not agree with a change in Contract Price or Contract Time or the method for adjusting them specified in the Work Change Directive within 21 days from date of the Work Change Directive's issuance, method and adjustment are determined by City Engineer. If Project Manager or Contractor disagree with City Engineer's determination they then may file a Claim in accordance with Section 4.4.

7.3.2.1 If City Engineer determines a method and adjustment in Contract Price under Paragraph 7.3.2, Contractor shall provide, in a form as City Engineer may prescribe, appropriate supporting data for items submitted under Paragraph 7.3.2. Failure to submit the data within 21 days of request for the data by City Engineer shall constitute waiver of a Claim.

7.3.2.2 Unless otherwise provided in the Contract, costs for the purposes of this Paragraph 7.3.2 are limited to the following:

- 7.3.2.2.1 costs of labor, including labor burden as stated below for social security, unemployment insurance, customary and usual fringe benefits required by agreement or custom, and Workers' Compensation insurance;
  - 7.3.2.2..1.1 the maximum labor burden applied to costs of labor for changes in the Work is 55 percent;
- 7.3.2.2.2 costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- 7.3.2.2.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from Contractor or others, with prior approval of City Engineer;
- 7.3.2.2.4 costs of premiums for Bonds and insurance and permit fees related to the change in the Work;
- 7.3.2.2.5 additional costs of direct supervision of work and field office personnel directly attributable to the change; and
- 7.3.2.2.6 allowances for overhead and profit as stated below.
  - 7.3.2.2.6.1 the maximum allowances for overhead and profit on increases due to Change Orders:
  - 7.3.2.2.6.2 for changes in the Work performed by Contractor and Subcontractors, allowance for overhead and profit are applied to an amount equal to cost of all additions less cost of all deletions to the Work. Allowance for overhead to Contractor and first tier Subcontractors on changes performed by Subcontractors are applied to an amount equal to the sum of all increases to the Work by applicable Subcontractors.

| | Overhead | Profit |
|---|---|---|
| to Contractor for change in the Work performed by Subcontractors: | 10 percent | 0 percent |
| to first tier Subcontractors for change in the Work performed by its Subcontractors: | 10 percent | 0 percent |
| to Contractor and Subcontractor for change in the Work performed by their respective firms: | 10 percent | 5 percent |

7.3.3 If the City deletes or makes a change, which results in a net decrease in Contract Price, the City is entitled to a credit calculated in accordance with Paragraphs 7.3.1 and 7.3.2 and Subparagraphs 7.3.2.1, and 7.3.2.2.1 through 7.3.2.2.5. When both additions and credits covering related work or substitutions are involved in a change, allowance for overhead and profit is figured on the basis of a net increase, if any, with respect to that change in accordance with Subparagraph 7.3.2.2.6.

7.3.4 When Contractor agrees with the determination made by City Engineer concerning adjustments in Contract Price and Contract Time, or the Parties otherwise reach agreement upon the adjustments, the agreement will be immediately recorded by Change Order.

7.4 *MINOR CHANGES IN THE WORK*

7.4.1 A Minor Change in Work is binding on the Parties. Contractor shall acknowledge, in a written form acceptable to City Engineer, that there is no change in Contract Time or Contract Price and shall carry out the written orders promptly.

## ARTICLE 8 - TIME

8.1 *PROGRESS AND COMPLETION*

8.1.1 Time is of the essence in the Contract. By executing the Contract, Contractor agrees that Contract Time is a reasonable period for performing the Work.

8.1.2 *Computation of Time:* In computing any period of time prescribed or allowed by the General Conditions, the day of the act, event, or default after which designated period of time begins to run is not to be included. Last day of the period so computed is to be included, unless it is a Sunday or Legal Holiday, in which event the period runs until end of next day which is not a Sunday or Legal Holiday. Sundays and Legal Holidays are considered to be days and are to be included in all other time computations relative to Contract Time.

8.1.3 Contractor may not commence the Work prior to the effective date of insurance and Bonds required by Article 11.

8.1.4 Contractor shall proceed expeditiously and without interruption, with adequate forces, and shall achieve Date of Substantial Completion within Contract Time.

8.1.5 Should progress of the Work fall behind construction schedule, except for reasons stated in Paragraph 8.2.1, Contractor shall promptly submit at the request of Project Manager, updated construction schedule to City Engineer for approval. Contractor's failure to submit updated schedule may, at City Engineer's discretion, constitute a material breach of the Contract. Contractor shall take action necessary to restore progress by working the hours, including night shifts and lawful overtime operations as necessary, to achieve Date of Substantial Completion within Contract Time.

8.1.6 Except in connection with safety or protection of persons or the Work or property at the site or adjacent to the site, and except as otherwise indicated in the Contract, all the Work at the site will be performed Monday through Saturday between the hours of 7:00 a.m. and 7:00 p.m. Contractor may not perform work between 7:00 p.m. and 7:00 a.m., on a Sunday, or on a Legal Holiday, without giving City Engineer 24-hour prior written notice and receiving written consent of City Engineer.

8.2 *DELAYS AND EXTENSIONS OF TIME*

8.2.1 Contractor may request extension of Contract Time for a delay in performance of work that arises from causes beyond control and without fault or negligence of Contractor. Examples of these causes are:

- 8.2.1.1 acts of God or of the public enemy;
- 8.2.1.2 acts of government in its sovereign capacity;
- 8.2.1.3 fires;
- 8.2.1.4 floods;
- 8.2.1.5 epidemics;
- 8.2.1.6 quarantine restrictions;
- 8.2.1.7 strikes;
- 8.2.1.8 freight embargoes;
- 8.2.1.9 unusually severe weather; and
- 8.2.1.10 discovery of Pollutants or Pollutant Facilities at the site.

8.2.2 For any reason other than those listed in Section 4.3.6.2, if the Contractor's work is delayed in any manner or respect, the Contractor shall have no claim for damages and shall have no right of additional compensation from the City by reason of any delay or increased expense to the Contractor's work, except for an extension of time as provided in this provision.

8.2.3 Contractor may request an extension of Contract Time for delay only if:

8.2.3.1 delay is caused by failure of Subcontractor or Supplier to perform or make progress; and

8.2.3.2 cause of failure is beyond control of both Contractor and Subcontractor or Supplier.

8.2.4 Claims relating to Contract Time must be made in accordance with Paragraph 4.3.7.

8.2.5 Claims for extending or shortening Contract Time are based on written notice promptly delivered by the Party making Claim to other Party. Claim must accurately describe occurrence generating Claim, and a statement of probable effect on progress of the Work.

8.2.6 Claims for extension of Contract Time are considered only when a Claim is filed within the time limits stated in Paragraph 4.3.3.

8.2.6.1 Notwithstanding paragraph 4.3.3, an extension of time for delays under this paragraph may be granted only upon written application by the Contractor within 48 hours from the claimed delay.

8.2.7 Written notice of Claim must be accompanied by claimant's written statement that adjustment claimed is entire adjustment to which claimant is entitled as a result of the occurrence of the event. When the Parties cannot agree, Claims for adjustment in Contract Time are determined by City Engineer in accordance with Section 4.4.

8.2.8 Adjustments to Contract Time are accomplished by Change Order.

## ARTICLE 9 - PAYMENTS AND COMPLETION

### 9.1 *UNIT PRICE WORK*

9.1.1 Where the Contract provides that all or part of the Work is based on Unit Prices, the Original Contract Price includes, for all Unit Price work, an amount equal to the sum of Unit Prices times Unit Price Quantities for each separately identified item of Unit Price work.

9.1.2 Each Unit Price includes an amount to cover Contractor's overhead and profit for each separately identified item.

9.1.3 The Contractor may not make a Claim against the City for excess or deficiency in Unit Price Quantities provided in the Contract, except as provided in Subparagraph 9.1.4. Payment at the prices stated in the Contract is in full for the completed work. Contractor is not entitled to additional payment for materials, supplies, labor, tools, machinery and all other expenditures incidental to satisfactory completion of the Work.

9.1.4 City Engineer may increase or decrease quantities of the Work within limitations stated in Paragraph 7.1.2. Contractor is entitled to payment for actual quantities of items provided at Unit Prices set forth in the Contract.

9.1.5 Where the final quantity of work performed by Contractor on Major Unit Price Work item differs by more than 25 percent from quantity of the item stated in the Contract, a Party may request an adjustment in Unit Price, for the portion that differs by more than 25 percent, by a Change Order under Section 7.3.

### 9.2 *ESTIMATES FOR PAYMENT, UNIT PRICE WORK*

9.2.1 Following the day of each month indicated in the Contract, Project Manager will prepare a Certificate for Payment for the preceding monthly period based on estimated units of work completed. Prior to preparing Certificate of Payment, Contractor shall have submitted to City Engineer, on a form approved by the Director of the Office of Business Opportunity, evidence satisfactory to the City Engineer of payments made to Subcontractors and Suppliers for the month preceding the month for which the Certificate for Payment is prepared, including evidence of electronic submission of certified payrolls.

9.2.2 Before final completion, City Engineer will review and confirm with Contractor the actual final installed Unit Price quantities. City Engineer's determination of actual final installed Unit Price quantities will be included in the final Certificate for Payment and any previous underpayments and overpayments will be reconciled with the actual final Unit Price quantities. Contractor shall file written notice of intent to appeal, if any, City Engineer's

determination within 10 days of receipt of final Certificate for Payment. Upon expiration of the 10-day period, City Engineer's decision is final and binding on the Parties. If Contractor submits notice within the 10-day period, Contractor shall submit a Claim in accordance with Section 4.4.

9.3 *STIPULATED PRICE WORK*

9.3.1 For work contracted on a Stipulated Price basis, 10 days before submittal of first Application for Payment, Contractor shall submit to City Engineer a Schedule of Values allocated to various portions of the Work, prepared in the form and supported by the data as City Engineer may require to substantiate its accuracy. This schedule, as approved by City Engineer, is used as a basis for approval of Contractor's Applications for Payment.

9.4 *APPLICATIONS FOR PAYMENT, STIPULATED PRICE WORK*

9.4.1 For work contracted on a Stipulated Price basis, Contractor shall submit Applications for Payment to City Engineer each month on a form acceptable to City Engineer in accordance with Schedule of Values. Application must indicate percentages of completion of each portion of the Work listed in Schedule of Values as of the end of the period covered by the Application for Payment.

9.4.2 Applications for Payment must be supported by substantiating data as City Engineer may require and must reflect retainages as provided below. Evidence satisfactory to the City Engineer of payments made to Subcontractors and Suppliers for the month preceding the month for which the Application for Payment is submitted must accompany each Application for Payment on a form approved by the Director of the Office of Business Opportunity. Evidence of electronic submission of certified payrolls must be included. Application must be sworn and notarized.

9.5 *CERTIFICATES FOR PAYMENT*

9.5.1 City Engineer will, within 10 days after the date specified in the Contract for Unit Price work, or upon receipt of Contractor's Application for Payment for Stipulated Price work, issue a Certificate for Payment for work based on amount which City Engineer determines is properly due, with copy to Contractor.

9.5.2 Unless otherwise provided in the Contract, payment for completed work and for properly stored Products is conditioned upon compliance with procedures satisfactory to City Engineer to protect the City's interests. Procedures will include applicable insurance, storage, and transportation to site for materials and equipment stored off-site. Contractor is responsible for maintaining materials and equipment until Date of Substantial Completion.

9.5.3 Contractor shall document its use of Ultra Low Sulfur Diesel Fuel by providing invoices and receipts evidencing Contractor's use.

9.6 *COMPUTATIONS OF CERTIFICATES FOR PAYMENT*

9.6.1 Subject to the provisions of the Contract, the amount of each Certificate for Payment is calculated as follows:

- 9.6.1.1 that portion of Contract Price allocated to completed work as determined by:
  - 9.6.1.1.1 multiplying the percentage of completion of each portion of the Work listed in the Schedule of Values by the value of that portion of the Work, or
  - 9.6.1.1.2 multiplying Unit Price quantities Installed times the Unit Prices listed in the Contract;
- 9.6.1.2 plus progress payments for completed work that has been properly authorized by Modifications;
- 9.6.1.3 less retainage of five percent;
- 9.6.1.4 plus actual costs, properly substantiated by certified copies of invoices and freight bills, of non-perishable materials and equipment delivered and properly stored, if approved in advance by Project Manager, less 15 percent;
- 9.6.1.5 less any previous payments by the City.

9.7 *DECISIONS TO WITHHOLD CERTIFICATION*

9.7.1 City Engineer may decline to certify payment and may withhold payment in whole or in part to the extent reasonably necessary to protect the City if, in City Engineer's opinion, there is reason to believe that:

- 9.7.1.1 nonconforming work has not been remedied;
- 9.7.1.2 the Work cannot be completed for unpaid balance of Contract Price;
- 9.7.1.3 there is damage to the City or another contractor;
- 9.7.1.4 the Work will not be completed within Contract Time and that unpaid balance

will not be adequate to cover actual and liquidated damages;

9.7.1.5 probable evidence that third party claims will be filed in court, in arbitration, or otherwise;

9.7.1.6 Contractor has failed to make payments to Subcontractors or Suppliers for labor, material, or equipment; or

9.7.1.7 Contractor has persistently failed to carry out work in accordance with the Contract.

9.7.1.8 Contractor has not paid Subcontractors or Suppliers because of a payment dispute; or

9.7.1.9 Contractor has failed to provide satisfactory evidence described in Paragraphs 9.2.1, 9.4.2, and 9.8.2.

9.7.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.7.3 City Engineer may decline to certify payment and may withhold request for payment in whole or in part upon failure of Contractor to submit initial construction schedule or monthly schedule updates, as required in Paragraphs 3.15.1 and 3.15.3.

9.8 *PROGRESS PAYMENTS*

9.8.1 The City will make payment, in an amount certified by City Engineer, within 20 days after City Engineer has issued a Certificate for Payment.

9.8.2 The City has no obligation to pay or to facilitate the payment to a Subcontractor or Supplier, except as may otherwise be required by law. Contractor shall comply with the prompt payment requirements of Chapter 2251 of the Government Code. State law requires payment of Subcontractors and Suppliers by Contractor within 7 calendar days of Contractor's receipt of payment from the City, unless there is a payment dispute between Contractor and a Subcontractor or Supplier evidenced on a form approved by the Director of Mayor's Office of Business Opportunity and submitted to the City Engineer each month with Application for Payment or Estimate for Payment. **CONTRACTOR SHALL DEFEND AND INDEMNIFY THE CITY FROM ANY CLAIMS OR LIABILITY ARISING OUT OF CONTRACTOR'S FAILURE TO MAKE THESE PAYMENTS.**

9.8.2.1 The City may, upon request and at the discretion of City Engineer, furnish to Subcontractor information regarding percentages of completion or the amounts applied for by Contractor, and action taken thereon by the City because of work done by the Subcontractor.

9.8.2.2 Contractor shall prepare and submit to City Engineer a Certification of Payment to Subcontractors and Suppliers form to be attached to each monthly Estimate for Payment or Application for Payment.

9.8.3 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Work by the City, does not constitute acceptance of work which is not in accordance with the Contract.

9.9 *DATE OF SUBSTANTIAL COMPLETION*

9.9.1 When Contractor considers the Work, or a portion thereof designated by City Engineer, to be substantially complete, Contractor shall prepare and submit to Project Manager a comprehensive punch list of items to be completed or corrected. Failure to include an item on the punch list does not alter the responsibility of Contractor to comply with the Contract.

9.9.1.1 By submitting the punch list to Project Manager, Contractor represents that work on the punch list will be completed within the time provided for in Subparagraph 9.9.4.3.

9.9.2 Upon receipt of Contractor's punch list, Project Manager will inspect the Work, or designated portion thereof, to verify that the punch list contains all items needing completion or correction. If Project Manager's inspection discloses items not on Contractor's punch list, the items must be added to the punch list of items to be completed or corrected. If Project Manager's inspection reveals that Contractor is not yet substantially complete, Contractor shall complete or correct the deficiencies and request another inspection by Project Manager. The City may recover the costs of re-inspection from Contractor.

9.9.3 Prior to City Engineer's issuing a Certificate of Substantial Completion, Contractor shall also provide:

9.9.3.1 Certificate of Occupancy for new construction, or Certificate of Compliance for remodeled work, as applicable, and

9.9.3.2 compliance with Texas Accessibility Standards through state inspection of the Work, if required. If Contractor calls for inspection in a timely manner and the inspection is delayed through no fault of Contractor, and City Engineer so confirms, City Engineer may, upon request by Contractor, add the inspection to the punch list in Paragraph 9.9.2 and issue a Certificate of Substantial Completion.

9.9.4 When the Work, or designated portion thereof, is determined by City Engineer to be sufficiently complete in accordance with the Contract so the City can occupy or utilize the Work, or designated portion thereof, for the purpose for which it is intended, City Engineer will prepare a Certificate of Substantial Completion that incorporates the punch list in Paragraph 9.9.2 and establishes:

9.9.4.1 Date of Substantial Completion;

9.9.4.2 responsibilities of the Parties for security, maintenance, heating, ventilating and air conditioning, utilities, damage to the Work, and insurance; and

9.9.4.3 fixed time within which Contractor shall complete all items on punch list of items to be corrected accompanying the certificate.

9.9.5 Warranties required by the Contract shall commence on the Date of Substantial Completion unless otherwise provided by City Engineer in Certificate of Substantial Completion. Warranties may not commence on items not substantially completed.

9.9.6 After Date of Substantial Completion and upon application by Contractor and approval by City Engineer, the City may make payment, reflecting adjustment in retainage, if any, as follows:

9.9.6.1 with the consent of Surety, the City may increase payment to Contractor to 96 percent of Contract Price, less value of items to be completed and accrued liquidated damages.

9.9.7 Contractor shall complete or correct the items in Paragraph 9.9.2 within the time period set out in the Certificate of Substantial Completion. If Contractor fails to do so, the City may issue a Notice of Noncompliance and proceed according to Section 2.5.

9.10 *PARTIAL OCCUPANCY OR USE*

9.10.1 The City may occupy or use any completed or partially completed portion of the Work at any stage, provided the occupancy or use is consented to by Contractor and Contractor's insurer and authorized by public authorities having jurisdiction over the Work. Consent of Contractor to partial occupancy or use may not be unreasonably withheld.

9.10.2 Immediately prior to the partial occupancy or use, Project Manager and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used to determine and record condition of the Work.

9.10.3 Partial occupancy or use of a portion of the Work does not constitute acceptance of work not in compliance with requirements of the Contract.

9.11 *FINAL COMPLETION AND FINAL PAYMENT*

9.11.1 Contractor shall review the Contract and inspect the Work prior to Contractor notification to City Engineer that the Work is complete and ready for final inspection. Contractor shall submit affidavit that the Work has been inspected and that the Work is complete in accordance with requirements of the Contract.

9.11.2 Project Manager will make final inspection within 15 days after receipt of Contractor's written notice that the Work is ready for final inspection and acceptance. If Project Manager finds the Work has been completed in accordance with the Contract, Contractor shall submit items set out in Paragraph 9.11.4 and, for stipulated price contracts, a final Application for Payment. City Engineer will, within 10 days, issue Certificate of Final Completion stating that to the best of City Engineer's knowledge, information, and belief, the Work has been completed in accordance with the Contract, and will recommend acceptance of the Work by City Council.

9.11.3 Should work be found not in compliance with requirements of the Contract, City Engineer will notify Contractor in writing of items of noncompliance. Upon inspection and acceptance of the corrections by Project Manager, compliance with all procedures of Paragraph 9.11.2, and Contractor's submission of the items set out in Paragraph 9.11.4, the City Engineer will issue Certificate of Final Completion to Contractor as provided in Paragraph 9.11.2.

9.11.4 Contractor shall submit the following items to City Engineer before City Engineer will issue a Certificate of Final Completion:

9.11.4.1 affidavit that payrolls, invoices for materials and equipment, and other indebtedness of Contractor connected

with the Work, less amounts withheld by the City, have been paid or otherwise satisfied. If required by City Engineer, Contractor shall submit further proof including waiver or release of lien or claims from laborers or Suppliers of Products;

9.11.4.2 certificate evidencing that insurance required by the Contract to remain in force after final payment is currently in effect, will not be canceled or materially changed until at least 30 days written notice has been given to the City;

9.11.4.3 written statement that Contractor knows of no substantial reason that insurance will not be renewable to cover correction and warranty period required by the Contract;

9.11.4.4 consent of Surety to final payment; and

9.11.4.5 copies of record documents, maintenance manuals, tests, inspections, and approvals.

Upon City Engineer's issuance of a Certificate of Final Completion, Contractor may request increase in payment to 99 percent of Contract Price, less accrued liquidated damages.

9.11.5 If Contractor fails to submit required items in Paragraph 9.11.4 within 10 days of Project Manager's inspection of the Work under Paragraph 9.11.2 or Paragraph 9.11.3, City Engineer may, but is not obligated to:

9.11.5.1 deduct liquidated damages accrued from monies held;

9.11.5.2 proceed to City Council for acceptance of the Work, minus some or all of the items Contractor fails to submit under Paragraph 9.11.4; and,

9.11.5.3 upon acceptance by City Council of the portion of the Work completed, make final payment as set out in Paragraph 9.11.8.

9.11.6 If final completion is materially delayed through no fault of Contractor, or by issuance of Change Orders affecting date of final completion, and City Engineer so confirms, the City may, upon application by Contractor and certification by City Engineer, and without terminating the Contract, make payment of balance due for that portion of the Work fully completed and accepted.

9.11.7 If remaining balance due for work not corrected is less than retainage stipulated in the Contract, Contractor shall submit to City Engineer written consent of Surety to payment of balance due for that portion of the Work fully completed and accepted, prior to certification of the payment. The payment is made under terms governing final payment, except that it does not constitute waiver of Claims.

9.11.8 The City will make final payment to Contractor within 30 days after acceptance of the Work by City Council, subject to limitations, if any, as stated in the Contract.

9.11.9 Acceptance of final payment by Contractor shall constitute a waiver of all Claims, whether known or unknown, by Contractor, except those previously made in writing and identified by Contractor as unsettled at time of final Application for Payment.

9.12 *LIQUIDATED DAMAGES*

9.12.1 Contractor, Surety, and the City agree that failure to complete the Work within Contract Time will cause damages to the City and that actual damages from harm are difficult to estimate accurately. Therefore, Contractor, Surety, and the City agree that Contractor and Surety are liable for and shall pay to the City the amount stipulated in Supplementary Conditions as liquidated damages, and that the amount of damages fixed therein is a reasonable forecast of just compensation for harm to the City resulting from Contractor's failure to complete the Work within Contract Time. The amount stipulated will be paid for each day of delay beyond Contract Time until Date of Substantial Completion.

9.12.2 Contractor shall pay the City an amount equal to $1,200.00 per diesel operating vehicle or piece of motorized equipment per incident of high sulfur diesel fuel usage.

## ARTICLE 10 - SAFETY PRECAUTIONS

10.1 *SAFETY PROGRAMS*

10.1.1 Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with performance of the Contract. Contractor shall submit a safety program to City Engineer prior to mobilizing for the Work, and is solely responsible for safety, efficiency, and adequacy of ways, means, and methods, and for damage which might result from failure or improper construction, maintenance, or operation performed by Contractor.

10.2 *POLLUTANTS AND POLLUTANT FACILITIES*

10.2.1 If Contractor encounters material on-site which it reasonably believes to be a Pollutant or facilities which it reasonably believes to be a Pollutant Facility, Contractor shall immediately stop work in affected area and immediately notify City Engineer, confirming the notice thereafter in writing.

10.2.2 If City Engineer determines that the material is a Pollutant or facility is a Pollutant Facility, work in affected area may not be resumed except by Modification, and only if the work would not violate applicable laws or regulations.

10.2.3 If City Engineer determines that the material is not a Pollutant or a facility is not a Pollutant Facility, work in affected area will be resumed upon issuance of a Modification.

10.2.4 Contractor is not required to perform, unless authorized by Change Order, work relating to Pollutants or Pollutant Facilities except for that work relating to Pollutants or Pollutant Facilities specified in the Contract.

10.3 *SAFETY OF THE ENVIRONMENT, PERSONS, AND PROPERTY*

10.3.1 Contractor shall take reasonable precautions for safety and shall provide reasonable protection to prevent damage, injury, or loss from all causes, to:

10.3.1.1 employees performing work on-site, and other persons who may be affected thereby;

10.3.1.2 work, including Products to be incorporated into the Work, whether in proper storage, under control of Contractor or Subcontractor; and

10.3.1.3 other property at or adjacent to the site, such as trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal or replacement in course of construction.

10.3.2 Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons, property, or environment.

10.3.2.1 Contractor shall comply with requirements of Underground Facility Damage Prevention and Safety Act TEX. UTIL. CODE ANN. Ch. 251 (Vernon Supp. 2002).

10.3.2.2 Contractor shall comply with all safety rules and regulations of the Federal Occupational Health and Safety Act of 1970 and subsequent amendments (OSHA).

10.3.3 Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection of persons and property, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.3.4 Contractor shall designate responsible member of Contractor's organization at site whose duty is prevention of accidents. This person will be Contractor's Superintendent unless otherwise designated by Contractor in writing to City Engineer.

10.3.5 Contractor shall prevent windblown dust and may not burn or bury trash debris or waste products on-site. Contractor shall prevent environmental pollution, including but not limited to particulates, gases and noise, as a result of the Work.

10.3.6 When use or storage of hazardous materials or equipment, or unusual methods are necessary for execution of the Work, Contractor shall exercise utmost care and carry on the activities under supervision of properly qualified personnel.

10.3.7 Contractor shall promptly remedy damage and loss to property referred to in Subparagraphs 10.3.1.2 and 10.3.1.3, caused in whole or in part by Contractor, or Subcontractors, which is not covered by insurance required by the Contract. Contractor is not required to remedy damage or loss attributable to the City, Design Consultant, or other contractors.

10.4 *EMERGENCIES*

10.4.1 In emergencies affecting safety of persons or property, Contractor shall act at Contractor's discretion to prevent imminent damage, injury, or loss. Additional compensation or extension of time claimed by Contractor because of emergencies are determined as provided in Article 7.

## ARTICLE 11 - INSURANCE AND BONDS

11.1 *GENERAL INSURANCE REQUIREMENTS*

11.1.1 With no intent to limit Contractor's liability under indemnification provisions set forth in Paragraphs 3.25 and 3.26, Contractor shall provide and maintain in full force and effect during term of the Contract and all extensions and amendments thereto, at least the following insurance and available limits of liability.

11.1.2 If any of the following insurance is written as "claims made" coverage and the City is required to be carried as additional insured, then Contractor's insurance shall include a two-year extended discovery period after last date that Contractor provides any work under the Contract.

11.1.3 Aggregate amounts of coverage, for purposes of the Contract, are agreed to be amounts of coverage available during fixed 12-month policy period.

11.2 *INSURANCE TO BE PROVIDED BY CONTRACTOR*

11.2.1 *Risks and Limits of Liability:* Contractor shall maintain the insurance coverages in the listed amounts, as set out in Table 1.

11.2.2 If Limit of Liability for Excess Coverage is $2,000,000 or more, Limit of Liability for Employer's Liability may be reduced to $500,000.

11.2.3 *Insurance Coverage*: At all times during the term of this Contract and any extensions or renewals, Contractor shall provide and maintain insurance coverage that meets the Contract requirements. Prior to beginning performance under the Contract, at any time upon the Director's request, or each time coverage is renewed or updated, Contractor shall furnish to the Director current certificates of insurance, endorsements, all policies, or other policy documents evidencing adequate coverage, as necessary. Contractor shall be responsible for and pay (a) all premiums and (b) any claims or losses to the extent of any deductible amounts. Contractor waives any claim it may have for premiums or deductibles against the City, its officers, agents, or employees. Contractor shall also require all subcontractors or consultants whose subcontracts exceed $100,000 to provide proof of insurance coverage meeting all requirements stated above except amount. The amount must be commensurate with the amount of the subcontract, but no less than $500,000 per claim.

11.2.4 *Form of insurance*: The form of the insurance shall be approved by the Director and the City Attorney; such approval (or lack thereof) shall never (a) excuse non-compliance with the terms of this Section, or (b) waive or estop the City from asserting its rights to terminate this Contract. The policy issuer shall (1) have a Certificate of Authority to transact insurance business in Texas, or (2) be an eligible non-admitted insurer in the State of Texas and have a Best's rating of at least B+, and a Best's Financial Size Category of Class VI or better, according to the most current Best's Key Rating Guide. Each insurer is subject to approval by City Engineer in City Engineer's sole discretion as to conformance with these requirements.

11.2.5 *Required Coverage*: The City shall be an Additional Insured under this Contract, and all policies except Professional Liability and Worker's Compensation must name the City as an Additional Insured. Contactor waives any claim or right of subrogation to recover against the City, its officers, agents, or employees, and each of Contractor's insurance policies except professional liability must contain coverage waiving such claim. Each policy, except Workers' Compensation and Professional Liability, must also contain an endorsement that the policy is primary to any other insurance available to the Additional Insured with respect to claims arising under this Contract. If professional liability coverage is written on a "claims made" basis, Contractor shall also provide proof of renewal each year for two years after substantial completion of the Project, or in the alternative: evidence of extended reporting period coverage for a period of two years after substantial completion, or a project liability policy for the Project covered by this Contract with a duration of two years after substantial completion.

11.2.6 *Deductibles:* Contractor assumes and bears any claims or losses to extent of deductible amounts and waives any claim it may ever have for same against the City, its officers, agents, or employees.

11.2.7 *Notice*: **CONTRACTOR SHALL GIVE 30 DAYS' ADVANCE WRITTEN NOTICE TO THE DIRECTOR IF ANY OF ITS INSURANCE POLICIES ARE CANCELED OR NON-RENEWED**. Within the 30-day period, Contractor shall provide other suitable policies in order to maintain the required coverage. If Contractor does not comply with this requirement, the Director, at his or her sole discretion, may immediately suspend Contractor from any further performance under this Agreement and begin procedures to terminate for default.

11.2.8 *Subrogation:* Contractor waives any claim or right of subrogation to recover against the City, its officers, agents, or employees. Each policy,

except professional liability, must contain an endorsement waiving such claim.

11.2.9 *Endorsement of Primary Insurance:* Each policy, except Workers' Compensation policies, must contain an endorsement that the policy is primary insurance to any other insurance available to additional insured with respect to claims arising hereunder.

11.2.10 *Liability for Premium:* Contractor is solely responsible for payment of all insurance premium requirements hereunder and the City is not obligated to pay any premiums.

11.2.11 *Additional Requirements for Workers' Compensation Insurance Coverage:* Contractor shall, in addition to meeting the obligations set forth in Table 1, maintain throughout the term of the Contract Workers' Compensation coverage as required by statute, and Contractor shall specifically comply with requirements set forth in Paragraph 11.2.10. The definitions set out below shall apply only for purposes of this Paragraph 11.2.10.

11.2.12 Definitions:

11.2.12.1 *Certificate of Coverage:* A copy of certificate of insurance, or coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory Workers' Compensation insurance coverage for Contractor's, Subcontractor's, or Supplier's employees providing services for the duration of the Contract.

11.2.12.2 *Duration of the Work:* Includes the time from Date of Commencement of the Work until Contractor's work under the Contract has been completed and accepted by City Council.

11.2.12.3 *Persons providing services for the Work (Subcontractor in Texas Labor Code § 406.096):* includes all persons or entities performing all or part of services Contractor has undertaken to perform on the Work, regardless of whether that person contracted directly with Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of the entity, or employees of entity which furnishes persons to provide services on the Work. Services include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to the Work. Services do not include activities unrelated to the Work, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

11.2.13 Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of coverage agreements, which meets the statutory requirements of TEX. LAB. CODE ANN., Section 401.011(44) for employees of Contractor providing services on the Work, for duration of the Work.

11.2.14 Contractor shall provide a Certificate of Coverage to the City prior to being awarded the Contract.

11.2.15 If coverage period shown on Contractor's original Certificate of Coverage ends during duration of the Work, Contractor shall file new Certificate of Coverage with the City showing that coverage has been extended.

11.2.16 Contractor shall obtain from each person providing services on the Work, and provide to City Engineer:

11.2.16.1 Certificate of Coverage, prior to that person beginning work on the Work, so the City will have on file Certificates of Coverage showing coverage for all persons providing services on the Work; and

11.2.16.2 no later than seven days after receipt by Contractor, new Certificate of Coverage showing extension of coverage, if coverage period shown on current Certificate of Coverage ends during the duration of the Work.

11.2.17 Contractor shall retain all required Certificates of Coverage for the duration of the Work and for one year thereafter.

11.2.18 Contractor shall notify City Engineer in writing by certified mail or personal delivery, within 10 days after Contractor knew or should have known, of any change that materially affects provision of coverage of any person providing services on the Work.

11.2.19 Contractor shall post on-site a notice, in text, form and manner prescribed by Texas Workers'

Compensation Commission, informing all persons providing services on the Work that they are required to be covered, and stating how person may verify coverage and report lack of coverage.

11.2.20 Contractor shall contractually require each person with whom it contracts to provide services on the Work to:

11.2.20.1 provide coverage, based on proper reporting of classification codes, payroll amounts and filing of any coverage agreements, which meets statutory requirements of TEX. LAB. CODE ANN., Section 401.011(44) for all its employees providing services on the Work, for the duration of the Work;

11.2.20.2 provide to Contractor, prior to that person's beginning work on the Work, a Certificate of Coverage showing that coverage is being provided for all employees of the person providing services on the Work, for the duration of the Work;

11.2.20.3 provide Contractor, prior to the end of the coverage period, a new Certificate of Coverage showing extension of coverage, if the coverage period shown on the current Certificate of Coverage ends during the duration of the Work;

11.2.20.4 obtain from each other person with whom it contracts, and provide to Contractor: (1) Certificate of Coverage, prior to other person's beginning work on the Work; and (2) new Certificate of Coverage showing extension of coverage, prior to end of coverage period, if coverage period shown on the current Certificate of Coverage ends during duration of the Work.

11.2.20.5 retain all required Certificates of Coverage on file for the duration of the Work and for one year thereafter;

11.2.20.6 notify City Engineer in writing by certified mail or personal delivery within 10 days after person knew, or should have known, of change that materially affects provision of coverage of any person providing services on the Work; and

11.2.20.7 contractually require each person with whom it contracts to perform as required by Paragraphs 11.2.10.1 through 11.2.10.7, with Certificates of Coverage to be provided to person for whom they are providing services.

11.2.21 By signing the Contract or providing or causing to be provided a Certificate of Coverage, Contractor is representing to the City that all employees of Contractor who will provide services on the Work will be covered by Workers' Compensation coverage for the duration of the Work, that coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with appropriate insurance carrier. Contractor is not allowed to self-insure Workers' Compensation. Contractor may be subject to administrative penalties, criminal penalties, civil penalties, or other civil actions for providing false or misleading information.

11.2.22 Contractor's failure to comply with Paragraph 11.2.10 is a breach of the Contract by Contractor, which entitles the City to declare the Contract void if Contractor does not remedy breach within 10 days after receipt of notice of breach from City Engineer.

11.2.23 *Subcontractor Insurance Requirements:* Contractor shall require Subcontractors and Suppliers to obtain Commercial General Liability, Workers' Compensation, Employer's Liability and Automobile Liability coverage that meets all the requirements of Paragraph 11.2. The amount must be commensurate with the amount of the subcontract, but not less than $500,000 per occurrence. Contractor shall require all Subcontractors with whom it contracts directly, whose subcontracts exceed $100,000, to provide proof of Commercial General Liability and Automobile Liability insurance coverage meeting the above requirements. Contractor shall comply with all requirements set out under Paragraph 11.2.10 as to Workers' Compensation Insurance for all Subcontractors and Suppliers.

REQUIRED COVERAGE

| (Coverage) | (Limit of Liability) |
|---|---|
| .1 Workers' Compensation | • Statutory Limits for Workers' Compensation |
| .2 Employer's Liability | • Bodily Injury by Accident $1,000,000 (each accident)<br>• Bodily Injury by Disease $1,000,000 (policy limit)<br>• Bodily Injury by Disease $1,000,000 (each employee) |
| .3 Commercial General Liability:<br>Including Contractor's Protective, Broad Form Property Damage, Contractual Liability, Explosion, Underground and Collapse, Bodily Injury, Personal Injury, Products, and Completed Operations (for a period of one year following completion of the Work). | • Combined single limit of $1,000,000 (each occurrence), subject to general aggregate of $1,000,000;<br>• Products and Completed Operations $1,000,000 aggregate. |
| .4 Owner's and Contractor's Protective Liability | • $1,000,000 combined single limit each Occurrence/ aggregate |
| .5 Installation Floater (Unless alternative coverage approved by City Attorney) | • Value of stored material or equipment, listed on Certificates of Payments, but not yet incorporated into the Work |
| .6 Automobile Liability Insurance:<br>(For automobiles furnished by Contractor in course of his performance under the Contract, including Owned, Non-owned, and Hired Auto coverage) | • $1,000,000 combined single limit each occurrence for (1) Any Auto or (2) All Owned, Hired, and Non-Owned Autos |
| .7 Excess Coverage | • $1,000,000 each occurrence/combined aggregate in excess of limits specified for Employer's Liability, Commercial General Liability, and Automobile Liability |
| Aggregate Limits are per 12-month policy period unless otherwise indicated. | |

11.3 *PROOF OF INSURANCE*

11.3.1 Prior to commencing services and at time during the term of the Contract, Contractor shall furnish City Engineer with Certificates of Insurance, along with Affidavit from Contractor confirming that Certificate accurately reflects insurance coverage that is available during term of the Contract. If requested in writing by City Engineer, Contractor shall furnish City Engineer with certified copies of Contractor's actual insurance policies. Failure of Contractor to provide certified copies, as requested, may be deemed, at City Engineer's or City Attorney's discretion, a material breach of the Contract.

11.3.2 Notwithstanding the proof of insurance requirements, Contractor shall continuously maintain in effect required insurance coverage set forth in Paragraph 11.2. Failure of Contractor to comply with this requirement does constitute a material breach by Contractor allowing the City, at its option, to immediately suspend or terminate work, or exercise any other remedy allowed under the Contract. Contractor agrees that the City has not waived or is not estopped to assert a material breach of the Contract because of any acts or omissions by the City regarding its review or non-review of insurance documents provided by Contractor, its agents, employees, or assigns.

11.3.3 Contractor shall provide updated certificates of insurance to the Director upon request. The Contractor shall be responsible for delivering a current certificate of insurance in the proper form to the Director as long as Contractor is required to furnish insurance coverage under Paragraph 11.2.

11.3.4 Every certificate of insurance Contractor delivers in connection with this Contract shall

11.3.4.1 be less than 12 months old;

11.3.4.2 include all pertinent identification information for the Insurer, including the company name and address, policy

number, NAIC number or AMB number, and authorized signature;

11.3.4.3 include in the Certificate Holder Box the Project name and reference numbers, contractor's email address, and indicates the name and address of the Project Manager;

11.3.4.4 include the Contractor's email address in the Certificate Holder Box;

11.3.4.5 include the Project reference numbers on the City address so the Project reference number is visible in the envelope window; and

11.3.4.6 be appropriately marked to accurately identify all coverages and limits of the policy, effective and expiration dates, and waivers of subrogation in favor of the City for Commercial General Liability, Automobile Liability, and Worker's Compensation/Employers' Liability.

11.4 *PERFORMANCE AND PAYMENT BONDS*

11.4.1 For Contracts over the value of $25,000, Contractor shall provide Bonds on the City's standard forms covering faithful performance of the Contract and payment of obligations arising thereunder as required in the Contract pursuant to Chapter 2253 of the Government Code. The Bonds must be for 100 percent of Original Contract Price and in accordance with conditions stated on standard City Performance and Payment Bond and Statutory Payment Bond forms. Bonds may be obtained from Contractor's usual source and cost for the Bonds are included in Contract Price.

11.5 *MAINTENANCE BONDS*

11.5.1 *One-year Maintenance Bond:* Contractor shall provide Bond on standard City One-year Maintenance Bond form, providing for Contractor's correction, replacement, or restoration of any portion of the Work which is found to be not in compliance with requirements of the Contract during one-year correction period required in Paragraph 12.2. The Maintenance Bond must be for 100 percent of the Original Contract Price.

11.6 *SURETY*

11.6.1 A Bond that is given or tendered to the City pursuant to the Contract must be executed by a surety company that is authorized and admitted to write surety Bonds in the State of Texas.

11.6.2 If a Bond is given or tendered to the City pursuant to the Contract in an amount greater than 10 percent of Surety's capital and surplus, Surety shall provide certification that Surety has reinsured that portion of the risk that exceeds 10 percent of Surety's capital and surplus. The reinsurance must be with one or more reinsurers who are duly authorized, accredited, or trusted to do business in the State of Texas. The amount reinsured by reinsurer may not exceed 10 percent of reinsurer's capital and surplus. The amount of allowed capital and surplus must be based on information received from State Board of Insurance.

11.6.3 If the amount of a Bond is greater than $100,000, Surety shall:

11.6.3.1 also hold certificate of authority from the United States Secretary of Treasury to qualify as surety on obligations permitted or required under federal law; or,

11.6.3.2 Surety may obtain reinsurance for any liability in excess of $100,000 from reinsurer that is authorized and admitted as a reinsurer in the State of Texas and is the holder of a certificate of authority from the United States Secretary of the Treasury to qualify as surety or reinsurer on obligations permitted or required under federal law.

11.6.4 Determination of whether Surety on the Bond or the reinsurer holds a certificate of authority from the United States Secretary of the Treasury is based on information published in Federal Register covering the date on which Bond was executed.

11.6.5 Each Bond given or tendered to the City pursuant to the Contract must be on City forms with no changes made by Contractor or Surety, and must be dated, executed, and accompanied by power of attorney stating that the attorney in fact executing such the bond has requisite authority to execute such Bond. The Bonds must be dated and must be no more than 30 days old.

11.6.6 Surety shall designate in its Bond, power of attorney, or written notice to the City, an agent resident in Harris County to whom any requisite notices may be delivered and on whom service of process may be had in matters arising out of the suretyship.

11.6.7 Contractor shall furnish information to a payment bond beneficiary as required by TEX. GOV'T CODE ANN. CH. 2253.

11.7 *DELIVERY OF BONDS*

11.7.1 Contractor shall deliver required Bonds to the City within time limits stated in Notice of Intent to Award and prior to Date of Commencement of the Work.

## ARTICLE 12 - UNCOVERING AND CORRECTION OF THE WORK

12.1 *UNCOVERING OF THE WORK*

12.1.1 If a portion of the Work has been covered which City Engineer has not specifically requested to observe prior to its being covered, City Engineer may request to see such work and it must be uncovered by Contractor. If such work is in accordance with the Contract, the costs of uncovering and covering such work are charged to the City by Change Order. If such work is not in accordance with the Contract, Contractor shall pay for uncovering and shall correct the nonconforming Work promptly after receipt of Notice of Noncompliance to do so.

12.2 *CORRECTION OF THE WORK*

12.2.1 Contractor shall promptly correct or remove work rejected by City Engineer or work failing to conform to requirements of the Contract, whether observed before or after Date of Substantial Completion and whether fabricated, Installed, or completed.

12.2.2 Contractor bears costs of correcting the rejected or nonconforming work including additional testing and inspections, and compensation for Design Consultant's services and expenses made necessary thereby.

12.2.3 If within one year after Date of Substantial Completion, or after date for commencement of warranties established under Paragraph 9.9.5 or by other applicable special warranty required by the Contract, whichever is later in time, any of the Work is found not to be in accordance with the requirements of the Contract, Contractor shall correct such work promptly after receipt of Notice of Noncompliance to do so.

12.2.4 One-year correction period for portions of the Work completed after Date of Substantial Completion will begin on the date of acceptance of that portion of the Work. This obligation under this Paragraph survives acceptance of the Work under the Contract and termination of the Contract.

12.2.5 The one-year correction period does not establish a duration for the Contractor's general warranty under Paragraph 3.12. The City retains the right to recover damages from the Contractor as long as may be permitted by the applicable statute of limitations.

12.2.6 If Contractor does not proceed with correction of the nonconforming work within time fixed by Notice of Noncompliance, the City may correct nonconforming work or remove nonconforming work and store salvageable Products at Contractor's expense. Contractor shall pay the costs of correction of nonconforming work and removal and storage of salvageable Products to the City. If Contractor does not pay costs of the correction or removal and storage within 10 days after written notice, the City may sell the Products at auction or at private sale. The City will account for proceeds thereof after deducting costs and damages that would have been borne by Contractor, including compensation for services of Design Consultant and necessary expenses. If the proceeds of sale do not cover costs which Contractor should have borne, Contractor shall pay the value of the deficiency to the City.

12.2.7 Contractor bears cost of correcting work originally installed by Contractor, the City, or by separate contractors and damaged by Contractor's correction or removal of Contractor's work.

12.3 *ACCEPTANCE OF NONCONFORMING WORK*

12.3.1 If City Engineer prefers to accept work which is not in accordance with requirements of the Contract, City Engineer may do so only by issuance of Change Order, instead of requiring its removal and correction. City Engineer will determine Contract Price reduction. The reduction will become effective even if final payment has been made.

## ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 *GOVERNING LAWS*

13.1.1 The Contract is subject to the laws of the State of Texas, the City Charter and Ordinances, the laws of the federal government of the United States, and all rules and regulations of any regulatory body or officer having jurisdiction.

13.1.2 Venue for any litigation relating to the Contract is Harris County, Texas.

13.2 *SUCCESSORS*

13.2.1 The Contract binds and benefits the Parties and their legal successors and permitted assigns; however, this Paragraph 13.2.1 does not alter the restrictions on assignment and disposal of assets set out in Paragraph 13.3.1. The Contract does not create any personal liability on the part of any officer or agent of the City.

13.3 *BUSINESS STRUCTURE AND ASSIGNMENTS*

13.3.1 Contractor may not assign the Contract at law or otherwise, or dispose of all or substantially all of its assets without City Engineer's prior written consent. Nothing in this Section, however, prevents the assignment of accounts receivable or the creation of a security interest as described in §9.406 of the Texas Business & Commerce Code. In the case of such an assignment, Contractor shall immediately furnish the City with proof of the assignment and the name, telephone number, and address of the assignee and a clear identification of the fees to be paid to the assignee.

13.3.2 Any series, as defined by the TEX. BUS. ORG. CODE ANN., affiliate, subsidiary, or successor to which Contractor assigns or transfers assets shall join in privity and be jointly and severally liable under this Contract.

13.4 *WRITTEN NOTICE*

13.4.1 All notices required or permitted by the Contract must be in writing and must be effected by hand delivery; registered or certified mail, return receipt requested; or facsimile with confirmation copy mailed to receiving Party. Notice is sufficient if made or addressed with proper postage to the address stated in the Agreement for each Party ("Notice Address") or faxed to the facsimile number stated in the Agreement for each Party. The notice is deemed delivered on the earlier of:

13.4.1.1 the date the Notice is actually received;

13.4.1.2 the third day following deposit in a United States Postal Service post office or receptacle; or

13.4.1.3 the date the facsimile is sent unless the facsimile is sent after 5:00 p.m. local time of the recipient and then it is deemed received on the following day.

Any Party may change its Notice Address or facsimile number at any time by giving written notice of the change to the other Party in the manner provided for in this Paragraph at least 15 days prior to the date the change is affected.

13.5 *RIGHTS AND REMEDIES*

13.5.1 Duties and obligations imposed by the Contract and rights and remedies available thereunder are in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

13.5.2 No act or failure to act by the City or Contractor is a waiver of rights or duties afforded them under the Contract, nor is the act or failure to act constitute approval of or acquiescence in a breach of the Contract. No waiver, approval or acquiescence is binding unless in writing and, in the case of the City, signed by City Engineer.

13.6 *TESTS AND INSPECTIONS*

13.6.1 Contractor shall give City Engineer, Construction Manager, and Design Consultant timely notice of the time and place where tests and inspections are to be made. Contractor shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.6.2 The City will employ and pay for services of an independent testing laboratory to perform inspections or acceptance tests required by the Contract except:

13.6.2.1 inspections or tests covered by Paragraph 13.6.3;

13.6.2.2 those otherwise specifically provided in the Contract; or

13.6.2.3 costs incurred in connection with tests or inspections conducted pursuant to Paragraph 12.2.2.

13.6.3 Contractor is responsible for and shall pay all costs in connection with inspection or testing required in connection with City Engineer's acceptance of a Product to be incorporated into the Work, or of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation into the Work.

13.6.4 Neither observations by the City, Construction Manager, or Design Consultant, nor inspections, tests, or approvals by others, relieves Contractor from Contractor's obligations to perform the Work in accordance with the Contract.

13.7 *INTEREST*

13.7.1 No interest will accrue on late payments by the City except as provided under Chapter 2251 of the Government Code.

13.8 *PARTIES IN INTEREST*

13.8.1 The Contract does not bestow any rights upon any third party, but binds and benefits the Parties only.

13.9 *ENTIRE CONTRACT*

13.9.1 The Contract merges the prior negotiations and understandings of the Parties and embodies the entire agreement of the Parties. No other agreements, assurances, conditions, covenants, express or implied, or other terms of any kind, exist between the Parties regarding the Contract.

13.10 *WRITTEN AMENDMENT*

13.10.1 Changes to the Contract that cannot be effected by Modifications, must be made by written amendment, which will not be effective until approved by City Council.

13.11 *COMPLIANCE WITH LAWS*

13.11.1 Contractor shall comply with the Americans with Disabilities Act of 1990 as amended (ADA) and Texas Architectural Barriers Act and all regulations relating to either statute.

13.11.2 Contractor shall comply with all applicable federal, state, and city laws, rules and regulations.

13.12 *SEVERABILITY*

13.12.1 If any part of the Contract is for any reason found to be unenforceable, all other parts remain enforceable to the extent permitted by law.

## ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 *TERMINATION BY THE CITY FOR CAUSE*

14.1.1 Each of the following acts or omissions of Contractor or occurrences shall constitute an "Event of Default" under the Contract:

14.1.1.1 Contractor refuses or fails to supply enough properly skilled workers or proper Products;

14.1.1.2 Contractor disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction;

14.1.1.3 Contractor is guilty of material breach of any duty or obligation of Contractor under the Contract, including, but not limited to, failure to submit certified payrolls electronically;

14.1.1.4 Contractor has had any other contract with the City terminated for cause at any time subsequent to the effective date of the Contract as set out in the Agreement; or

14.1.1.5 Contractor fails to utilize Ultra Low Sulfur Diesel Fuel, as required in Paragraph 3.9.1.1.

14.1.2 If an Event of Default occurs, City Engineer may, at his option and without prejudice to any other rights or remedies which the City may have, deliver a written notice to Contractor and Surety describing the Event of Default and giving the Contractor 10 days to cure the Event of Default. If after the cure period, Contractor has failed or refused to cure the Event of Default, then City Engineer may deliver a second written notice to Contractor giving notice of the termination of the Contract or of the termination of Contractor's performance under the Contract ("Notice of Termination"). If City Engineer issues a Notice of Termination, then City Engineer may, subject to any prior rights of Surety and any other rights of the City under the Contract or at law:

14.1.2.1 request that Surety complete the Work; or

14.1.2.2 take possession of the site and all materials, equipment, tools, and construction equipment and machinery on the site owned by Contractor; and

14.1.2.3 finish the Work by whatever reasonable method City Engineer may deem expedient.

14.1.3 After Contractor's receipt of a Notice of Termination, and except as otherwise directed in writing by City Engineer, Contractor shall:

14.1.3.1 stop the Work on the date and to the extent specified in the Notice of Termination;

14.1.3.2 place no further orders or subcontracts for Products or services;

14.1.3.3 terminate all orders and subcontracts to the extent that they relate to performance of work terminated;

14.1.3.4 assign to the City, in the manner, at the times, and to the extent directed by City Engineer, all rights, title, and interest of Contractor, under the terminated supply orders and subcontracts. The City may settle or pay claims arising out of termination of the orders and subcontracts;

14.1.3.5 settle all outstanding liabilities and all claims arising out of the termination of

supply orders and subcontracts with approval of City Engineer;

14.1.3.6 take action as may be necessary, or as City Engineer may direct, for protection and preservation of property related to the Work that is in possession of Contractor, and in which the City has or may acquire an interest; and

14.1.3.7 secure the Work in a safe state before leaving the site, providing any necessary safety measures, shoring, or other devices.

14.1.4 If the City terminates the Contract or terminates Contractor's performance under the Contract for any one or more of the reasons stated in Paragraph 14.1.1, Contractor may not receive any further payment until the Work is complete, subject to Paragraph 14.1.5.

14.1.5 If the unpaid balance of Contract Price exceeds the costs of finishing the Work, including liquidated damages and other amounts due under the Contract, the balance will be paid to Contractor. If the costs of finishing the Work exceed the unpaid balance, Contractor shall, within 10 days of receipt of written notice setting out the amount of the excess costs, pay the difference to the City. The amount to be paid to Contractor or the City will be certified by City Engineer in writing, and this obligation for payment shall survive termination of the Contract or termination of Contractor's performance under the Contract. Termination of the Contractor for cause shall not relieve the Surety from its obligation to complete the project.

14.2 *TERMINATION BY THE CITY FOR CONVENIENCE*

14.2.1 City Engineer may, without cause and without prejudice to other rights or remedies of the City, give Contractor and Surety a Notice of Termination with a seven days written notice.

14.2.2 After receipt of the Notice of Termination, and except as otherwise approved by City Engineer, Contractor shall conform to requirements of Paragraph 14.1.3.

14.2.3 After receipt of the Notice of Termination, Contractor shall submit to the City its termination Claim, in forms required by City Engineer. The Claim will be submitted to the City promptly, but no later than six months from the effective date of termination, unless one or more extensions are granted by City Engineer in writing. If Contractor fails to submit its termination Claim within the time allowed, in accordance with Paragraph 14.2.4, City Engineer will determine, on the basis of available information, the amount, if any, due to Contractor because of termination, and City Engineer's determination is final and binding on the Parties. The City will then pay to Contractor the amount so determined.

14.2.4 City Engineer will determine, on the basis of information available to City Engineer, the amount due, if any, to Contractor for the termination as follows:

14.2.4.1 Contract Price for all work performed in accordance with the Contract up to the date of termination determined in the manner prescribed for monthly payments in Article 9, except no retainage is withheld by the City either for payment determined by percentage of completion or for materials and equipment delivered to the site, in storage or in transit.

14.2.4.2 Reasonable termination expenses, including costs for settling and paying Subcontractor and Supplier claims arising out of termination of the Work, reasonable cost of preservation and protection of the City's property after termination, if required, and the cost of Claim preparation. Termination expenses do not include field or central office overhead, salaries of employees of Contractor, or litigation costs, including attorneys' fees.

No amount is allowed for anticipated profit or central office overhead on uncompleted work, or any cost or lost profit for other business of Contractor alleged to be damaged by the termination.

14.2.5 Contractor shall promptly remove from the site any construction equipment, tools, and temporary facilities, except the temporary facilities which City Engineer may wish to purchase and retain.

14.2.6 Contractor shall cooperate with City Engineer during the transition period.

14.2.7 The City will take possession of the Work and materials delivered to the site, in storage, or in transit, as of date or dates specified in the Notice of Termination, and is responsible for maintenance, utilities, security, and insurance, as stated in Notice of Termination.

14.3 *SUSPENSION BY THE CITY FOR CONVENIENCE*

14.3.1 City Engineer may, without cause, after giving Contractor and Surety 24-hour prior written notice, order Contractor to suspend, delay, or interrupt the Work in whole or in part for a period of time as City Engineer may determine.

14.3.2 An adjustment will be made in Contract Time equivalent to the time of suspension.

14.3.3 Adjustment will be made to Contract Price for increases in the cost of performance of the Work, including profit on increased cost of performance caused by suspension, delay, or interruption of the Work in accordance with Paragraph 7.3. No adjustment will be made to the extent that:

14.3.3.1 performance was, or would have been, suspended, delayed, or interrupted by another cause for which Contractor is responsible; or

14.3.3.2 adjustment is made or denied under another provision of the Contract.

14.4 *TERMINATION BY CONTRACTOR*

14.4.1 Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of Contractor, directly related to one of these events:

14.4.1.1 issuance of an order of a court or other public authority having jurisdiction;

14.4.1.2 act of government, such as a declaration of national emergency which makes material unavailable; or

14.4.1.3 if repeated suspensions, delays, or interruptions by the City as described in Paragraph 14.3 constitute, in the aggregate, more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less;

No termination will be effective for the above reasons if Contractor delivers written notice to City Engineer describing the reason for termination, giving the proposed termination date, and granting the City a reasonable opportunity to respond and cure any City default before termination is effective.

14.4.2 If the Contract is terminated pursuant to this Paragraph 14.4, Contractor shall comply with the requirements of Paragraphs 14.2.2 through 14.2.7.

END OF DOCUMENT

Document 00800

SUPPLEMENTARY CONDITIONS

*Project Manager: Sam Kanu, P.E.*
*Project No.: WBS N-320610-B125-4*

The following Paragraphs amend and supplement the November 1, 2011 edition of General Conditions. Unaltered portions of General Conditions remain in effect.

ARTICLE 3 - THE CONTRACTOR

3.5 *LABOR: Insert the following Paragraph 3.5.3.1.1*

3.5.3.1.1 If the original contract price is greater than $1 Million Dollars, the Contractor shall make good faith efforts to comply with the City ordinances regarding Minority Business Enterprises (MBE), Persons with Disabilities Business Enterprises (PDBE) and Small Business Enterprise (SBE) participation goals which are as follows:

.1 the MBE goal is 9% percent,

.2 the WBE goal is 6% percent, and

.3 the PDBE goal is 0 percent

ARTICLE 4 – ADMINISTRATION OF THE CONTRACT

4.3 *CLAIMS AND DISPUTES: Insert the following Paragraph 4.3.3.1:*

4.3.3.1 Contractor waives any claim if contractor fails to submit the claim within 90 days of the date of the occurrence giving rise to the claim ("90 day time limit"). Contractor shall automatically release the city from any claim not submitted before the 90 day time limit when contractor submits an application for payment after the 90 day time limit.

ARTICLE 8 - TIME

8.1 *PROGRESS AND COMPLETION: Add the following Paragraph 8.1.6.1.*

8.1.6.1 Contractor shall credit the City by Change Order for inspection services for overtime work or work performed on Sundays or Legal Holidays. The amount Contractor credits the City will be $50.00 per hour per inspector for inspection services.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.12 *LIQUIDATED DAMAGES*: *Insert the following Paragraph 9.12.1.1.*

9.12.1.1 The amount of liquidated damages payable by Contractor or Surety for each and every day of delay beyond Contract Time, are $800.00 per day.

END OF DOCUMENT

Document 00805

# EQUAL EMPLOYMENT OPPORTUNITY PROGRAM REQUIREMENTS
(City of Houston Information Requirements
for the Successful Bidder on All Construction Contracts)

## DOCUMENTS THAT MUST BE SIGNED AND RETURNED TO THE CITY OF HOUSTON PRIOR TO FINAL EXECUTION OF CONTRACT

Certification by Bidder Regarding Equal Employment Opportunity ..... EEO-3

Total Work Force Composition of the Company,..... EEO-6
*or in lieu thereof, a copy of the latest Equal Employment Opportunity Commission's EEO-1 form (This information is required only if the Contractor has a work force of 50 or more people and the Contract is $50,000 or more.)*

Company's Equal Employment Opportunity Compliance Program ..... EEO-7

## INFORMATION THAT MUST BE SUPPLIED DURING THE COURSE OF THE WORK

Certification By Proposed Subcontractor Regarding
Equal Employment Opportunity ..... EEO-26

Certification by Proposed Material Suppliers, Lessors,and
Professional Service Providers Regarding Equal Employment Opportunity..... EEO-29

PLEASE COMPLETE PAGES EEO-3 THROUGH EEO-7 AND MAIL TO:

City of Houston
Mayor's Office of Business Opportunity
Contract Compliance Section
611 Walker, 7th Floor
Houston, Texas 77002
Attention: Director

The remainder of the reports can be mailed at the appropriate time.

# EQUAL EMPLOYMENT OPPORTUNITY PROGRAM REQUIREMENTS

The following are Equal Employment Opportunity requirements to be met and documents to be submitted to:

Mayor's Office of Business Opportunity
Contract Compliance Section
611 Walker, 7th Floor
Houston, Texas 77002

Under the conditions and terms of all City construction contracts, the prime contractor is responsible for all Equal Employment Opportunity compliance, including subcontractor compliance.

## EQUAL EMPLOYMENT OPPORTUNITY FORMS (EEO Forms)

These forms are submitted by the prime contractors at the beginning of the Project and as requested:

- EEO Forms 3, 6, and 7, by prime contractors

This form is submitted by all subcontractors before they begin work on the project:

- EEO Form 26 by subcontractors

This form is submitted by all suppliers, lessors, or professional services providers before they begin work on the project:

- EEO Form 29

## POSTING

The following poster should be clearly displayed on each job site, or in case of annual service agreements, in the Contractor's office:

Equal Employment Opportunity is the Law Poster

## JOB SITE VISITS

Site visits will be made by a Contract Compliance Officer, who will make their presence known to the Project Manager, Supervisor, or Foreman, and will conduct interviews with employees on site.

## PAYMENT AND EVALUATION

Upon completion of the Project, as part of the contract-awarding department's total clearance process, the Office of Business Opportunity's Contract Compliance Section must certify to the department that all EEO compliance requirements have been met.

CERTIFICATION BY BIDDER REGARDING
EQUAL EMPLOYMENT OPPORTUNITY

GENERAL

In accordance with Executive Order 11246 (30 F.R. 12319-25), the implementing rules and regulations thereof, and orders of the Secretary of Labor, a certification regarding Equal Opportunity is required of bidders or prospective contractors and their proposed subcontractors prior to the award of contracts or subcontracts.

CERTIFICATION OF BIDDER

Bidder's Name:_____

Address:_____

Telephone Number:_____ Fax :_____

Name of the Company's EEO Officer: _____

E-mail Address:_____

Web Page/URL Address:_____

IRS Employer Identification Number:_____

Work to be performed:_____

Project No: _____

1. Participation in a previous contract or subcontract.

   a. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause. ☐ YES ☐NO

   b. Compliance reports were required to be filed in connection with such contract or subcontract. ☐YES ☐NO

   c. Bidder has filed all compliance reports required by Executive Orders 10925, 11114, 11246, or by regulations of the Equal Employment Opportunity Commission issued pursuant to Title VII of the Civil Rights Act of 1964. ☐ YES ☐NO

   d. If answer of Item c. is "No", please explain in detail on reverse side of this certification.

2. Dollar amount of bid:$ _____

3. Anticipated performance period in days: _____

4. Expected total number of employees to perform the proposed construction: _____

5. Nonsegregated facilities.

   a. Notice to prospective federally-assisted construction contractors

      (1) A Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted to the recipient prior to the award of a federally-assisted construction contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

      (2) Contractors receiving federally-assisted construction contract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity Clause.

      The federally-assisted construction Contractor certifies that he/she does not maintain or provide any segregated facilities at any of his/her establishments, and does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The federally-assisted construction Contractor certifies further that he/she will not maintain or provide segregated facilities at any of his/her establishments, and will not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The federally-assisted construction Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin because of habit, local custom, or otherwise. The federally-assisted construction Contractor agrees that (except where he/she has obtained identical certifications from proposed Subcontractors for specific time periods) he/she will obtain identical certifications in duplicate from proposed Subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that he/she will retain the duplicate of such certifications in his/her files. The Subcontractor will include the original in his/her bid package.

6. Race or ethnic group designation of bidder. Enter race or ethnic group in appropriate box:

☐ White ☐ Black ☐ Hispanic

☐ Pacific Islander, Asian ☐ American Indian, Aleut.

7. Gender of Owner ☐ Male ☐ Female

REMARKS: _____

Certification - The information above is true and complete to the best of my knowledge and belief.

_____
Company Officer (Please Type)

_____ _____
Signature Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

# Total Work Force Composition of the Company

City of Houston, Affirmative Action Requirements for All Construction Contracts

| | White | | Black | | Hispanic | | Pacific Islander/ Asian | | Alaska Native/ Amer Ind. | | Total Persons | | Total Minority | | Total Female | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| Officials and Administrators | | | | | | | | | | | | | | | | |
| Professionals | | | | | | | | | | | | | | | | |
| Paraprofessionals | | | | | | | | | | | | | | | | |
| Technicians | | | | | | | | | | | | | | | | |
| Protective Service Workers | | | | | | | | | | | | | | | | |
| Sales Workers | | | | | | | | | | | | | | | | |
| Office and Clerical | | | | | | | | | | | | | | | | |
| Skilled Craft Workers | | | | | | | | | | | | | | | | |
| Operatives (Semi-skilled) | | | | | | | | | | | | | | | | |
| Laborers (Unskilled) | | | | | | | | | | | | | | | | |
| Service / Maintenance Workers | | | | | | | | | | | | | | | | |
| Others | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | |

This report includes all of the company's permanent work force. For description of job categories, see Pages CC-27 through CC-29.

**Check One:** [ ] **Contractor** [ ] **Subcontractor**

**COMPANY:** _____ **DATE:** _____

## EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE PROGRAM FOR

_____

**Name of Company**

The Company's Office of Business Opportunity Program shall consist of documented good faith efforts to comply with the goals, timetables, and objectives set forth in the following Affirmative Action steps:

A. City of Houston's Specific Equal Employment Opportunity Policy and Clause as contained in City Council Ordinance No. 78-1538, passed August 9, 1978.

B. Notice of Requirement for Office of Business Opportunity to ensure Equal Employment Opportunity (Executive Order 11246).

C. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246).

Project: _____

_____
Company Officer (Please Type)

_____ _____
Signature Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

SPECIAL PROVISIONS
SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY POLICY

1. GENERAL

   a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity are required by Executive Order 11246, as amended. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for Project activities under this Contract and shall supplement the notice of requirement for affirmative action to ensure equal employment opportunity and standard federal equal employment opportunity construction contract specifications.
   b. The Contractor shall work with the City and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the Contract.
   c. The prime Contractor and all Subcontractors holding subcontracts of $10,000 or more shall comply with the following minimum specific requirement activities of equal employment opportunity. The Contractor shall include these requirements in every subcontract of $10,000 or more with such modification of language as is necessary to make them binding on the Subcontractor.

2. EQUAL EMPLOYMENT OPPORTUNITY POLICY

   The Contractor shall accept as his/her operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, age, color, religion, sex, or national origin, and to promote the full realization of equal employment opportunity through a positive continuing program:

   It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, or national origin. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

3. EQUAL EMPLOYMENT OPPORTUNITY OFFICER

   The Contractor shall designate and make known to the City contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who must be capable of effectively administering and promoting an active Contractor program of equal employment opportunity and who must be assigned adequate authority and responsibilities to do so.

4. DISSEMINATION OF POLICY

a. All members of the Contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement the Contractor's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions shall be taken as a minimum:

(1) Periodic meetings of supervisory and personnel office employees shall be conducted before the start of work and then not less often than once every six months, at which time the Contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings shall be conducted by the EEO Officer or other knowledgeable company official.

(2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, or other knowledgeable company official, covering all major aspects of the Contractor's equal employment opportunity obligations, within 30 days following their reporting for duty with the Contractor.

(3) The EEO Officer or appropriate company official shall instruct all employees engaged in the direct recruitment of employees for the Project relative to the methods followed by the Contractor in locating and hiring minorities and females.

b. In order to make the Contractor's equal employment opportunity policy known to all employees, prospective employees, and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Contractor shall take the following actions:

(1) Notices and posters setting forth the Contractor's equal employment opportunity policy shall be placed in areas readily accessible to employees, applicants for employment, and potential employees.

(2) The Contractor's equal employment opportunity policy and the procedures to implement such policy shall be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. RECRUITMENT

a. When advertising for employees, the Contractor shall include in all advertisements for employees the notation "An Equal Opportunity Employer". All such advertisements will be published in newspapers, or

other publications, having a large circulation among minority groups in the area from which the Project work force would normally be derived.

b. The Contractor shall, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee-referral sources likely to yield qualified minority-group applicants, including, but not limited to, State employment agencies, schools, colleges, minority-group organizations, and female recruitment agencies. To meet this requirement, the Contractor shall, through his/her EEO Officer, identify sources of potential minority and female employees, and establish with such identified sources procedures whereby such group applicants may be referred to the Contractor for employment consideration.

In the event the Contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he/she is expected to observe the provisions of that agreement to the extent that the system permits the Contractor's compliance with equal employment opportunity Contract provisions. (The U. S. Department of Labor has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the Contractor to do the same, such implementation violates Executive Order 11246 as amended).

c. The Contractor shall encourage his/her present employees to refer female or minority-group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring such applicants will be discussed with employees.

6. PERSONNEL ACTIONS

a. Wage, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff and termination, shall be taken without regard to race, color, religion, sex, national origin, or age. The following procedures shall be followed:

(1) The Contractor shall conduct periodic inspections of Project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of Project-site personnel.

(2) The Contractor shall periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

(3) The Contractor shall periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Contractor shall promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

(4) The Contractor shall promptly investigate all complaints of alleged discrimination made in connection with his/her obligations under this Contract, shall attempt to resolve such complaints, and shall take appropriate corrective action. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Contractor shall inform every complainant of all avenues of appeal.

7. TRAINING AND PROMOTION

a. The Contractor shall assist in locating, qualifying, and increasing the skills of minority-group and women employees and applicants for employment.

b. Consistent with the Contractor's work force requirements and as permissible under Federal and State regulations, the Contractor shall make full use of training programs, i.e., apprenticeship and on-the-job training programs, for the geographical area of Contract performance.

c. The Contractor shall advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The Contractor shall periodically review the training and promotion potential of minority-group and women employees and shall encourage eligible employees to apply for such training and promotion.

8. UNIONS

If the Contractor relies in whole or in part upon unions as a source of employees, he/she shall use his/her best efforts to obtain the cooperation of such unions to increase minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the Contractor, either directly or through a contractor's association acting as his/her agent, will include the procedures set forth below:

a. The Contractor shall use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority-group members and women for membership in the unions and increasing the skills of minority-group employees and women so that they may qualify for higher-paying employment.

b. The Contractor shall use best efforts to incorporate an equal employment opportunity clause into all union agreements to the end that such unions will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, or age.

c. The Contractor is to obtain information as to the referral practices and policies of the labor union, except that to the extent such information is within the exclusive possession of the labor union, and such labor union refuses to furnish such information to the Contractor, the Contractor shall so certify to the City and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the Contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the Contractor shall, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, age, sex, or national origin, making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U. S. Department of Labor has held that it shall be no excuse that the union with which the Contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the Contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such Contractor shall immediately notify the City.

9. SUBCONTRACTING

a. The Contractor shall use his/her best efforts to solicit bids from and to utilize minority-group and female subcontractors or subcontractors with meaningful minority-group and/or female representation among their employees.

b. The Contractor shall use his/her best efforts to assure Subcontractors' compliance with their equal employment opportunity obligations.

10. RECORDS AND REPORTS

a. The Contractor shall keep such records as are necessary to determine compliance with the Contractor's equal employment opportunity obligations. The records kept by the Contractor will be designed to indicate:

(1) The number of minority and non-minority group members and women employed in each work classification on the Project.

(2) The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractors who rely in whole or in part on unions as a source of their work force).

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees.

(4) The progress and efforts being made in securing the services of female and minority subcontractors.

b. All records, including payrolls, must be retained for a period of three years following completion of the Contract work and shall be available at reasonable times and places for inspection by authorized representatives of the City and/or the appropriate federal agency.

CITY OF HOUSTON, TEXAS

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

Pursuant to City Council Ordinance No. 78-1538, passed August 9, 1978, all contracts entered into by the City of Houston involving the expenditure of $10,000 or more, shall incorporate the following Equal Employment Opportunity Clause:

1. The Contractor, Subcontractor, vendor, Supplier, or lessee shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age. The Contractor, Subcontractor, vendor, Supplier, or lessee shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, or age. Such action will include, but not be limited to, the following: employment; upgrading; demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor, Subcontractor, vendor, Supplier, or lessee agrees to post in conspicuous places available to employees, and applicants for employment, notices to be provided by the City setting forth the provisions of this Equal Employment Opportunity Clause.

2. The Contractor, Subcontractor, vendor, Supplier, or lessee states that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin, or age.

3. The Contractor, Subcontractor, vendor, Supplier, or lessee shall send to each labor union or representatives of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer advising the said labor union or workers' representative of the Contractor's and Subcontractor's commitments under Section 202 of Executive Order No. 11246, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Contractor, Subcontractor, vendor, Supplier, or lessee will comply with all provisions of Executive Order No. 11246 and the rules, regulations, and relevant orders of the Secretary of Labor or other Federal Agency responsible for enforcement of the equal opportunity and affirmative action provisions applicable, and shall likewise furnish all information and reports required by the Mayor and/or Contractor Compliance Officers for purposes of investigation to ascertain and effect compliance with this program.

5. The Contractor, Subcontractor, vendor, Supplier, or lessee shall furnish all information and reports required by Executive Order No. 11246, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and shall permit access to all books, records, and accounts by the appropriate City and Federal officials for purposes of investigation to ascertain compliance with such rules, regulations, and orders. Compliance reports filed at such times as directed shall contain information as to the employment practice policies, program, and work force statistics of the Contractor, Subcontractor, vendor, Supplier, or lessee.

6. In the event of a Contractor's, Subcontractor's, vendor's, Supplier's, or lessee's non-compliance with the non-discrimination clause of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Contractor, Subcontractor, vendor, Supplier, or lessee may be declared ineligible for further City contracts in accordance with procedures provided in Executive Order No. 11246, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as may otherwise be provided by law.

7. The Contractor shall include the provisions of paragraphs 1 through 8 of this Equal Employment Opportunity Clause in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965 so that such provisions will be binding upon each Subcontractor or vendor. The Contractor shall take such action with respect to any subcontractor or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with litigation with a Subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

8. The Contractor shall file and shall cause each of his Subcontractors, if any, to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor's Office of Business Opportunity. Compliance reports filed at such times as directed shall contain information as to the practices, policies, programs, employment policies, and employment statistics of the Contractor and each Subcontractor.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

| Timetable | Goals for Minority Participation for Each Trade | Goals for Female Participation for Each Trade |
|---|---|---|
| | 26.2% - 27.3% | 6.9% |

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally-assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the Contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the Contract, the Executive Order, and regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the Subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

4. As used in this Notice, and in the Contract resulting from this solicitation, the "covered area" is The Houston, Texas Standard Metropolitan Statistical Area.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
(EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941.

   d. "Minority" includes:

      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);

      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this Contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for

those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement to refer either minorities or women, shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which Contractor's employees are assigned to work. The Contractor, where possible, shall assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources; provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions, including specific review of these items with on-site supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of

these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare, through appropriate training, etc., for such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in Paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the

Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.B.

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee the name, address, telephone number, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily-understandable and retrievable form; however to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

DESCRIPTION OF JOB CATEGORIES

Officials, Managers, and Administrators

Occupations requiring administrative personnel who set board policies, exercise overall responsibility for the execution of these policies, or provide specialized consultation on a regional, district, area basis, or direct individual departments or special phases of a firm's operations.

Includes: Officials, executives, middle management, plant managers, department managers, superintendents, salaried foremen who are members of management, purchasing agents, buyers, bureau chiefs, directors, deputy directors, wardens, examiners, sheriffs, police and fire chiefs, and kindred workers.

Professionals

Occupations which require specialized and theoretical knowledge which is usually acquired through college or experience of such kind and amount as to provide a comparable background.

Includes: Accountants, auditors, airplane pilots and navigators, architects, artists, chemists, designers, dieticians, editors, engineers, lawyers, librarians, mathematicians, natural scientists, registered professional nurses, personnel and labor relations workers, physical scientists, teachers, social workers, doctors, psychologists, economists, systems analysts, employment and vocational rehabilitation counselors, instructors, police and fire captains and lieutenants, and kindred workers.

Paraprofessionals

Occupations in which workers perform some of the duties of a professional or technician in a supportive role, which usually requires less formal training and/or experience normally required for professional or technical status. Such positions may fall within an identified pattern of a "New Careers" concept.

Includes: Library assistants, medical aides, child support workers, police auxiliary, welfare service aides, recreation assistants, homemakers aides, home health aides, and kindred workers.

Technicians

Occupations requiring a combination of basic scientific knowledge and manual skill which can be obtained through about two (2) years of post high school education, such as is offered in many technical institutes and junior colleges, or through equivalent on-the-job training.

Includes: Computer programmers and operators, draftsmen, engineering aides, junior engineers, mathematical aides, licensed practical or vocational nurses, photographers, radio operators, scientific assistants, surveyors, technical illustrators, technicians (medical, dental, electronics, physical sciences), police and fire sergeants, and kindred workers.

Protective Service Workers

Occupations in which workers are entrusted with public safety, security, and protection from destructive forces.

Includes: Police patrol officers, fire fighters, guards, deputy sheriffs, bailiffs, correctional officers, detectives, marshals, harbor patrol officers, and kindred workers.

Sales Workers

Occupations engaging wholly or primarily in direct selling.

Includes: Advertising agents and salespersons, insurance agents and brokers, real estate agents and brokers, stock and bond salespersons, demonstrators, salespersons and sales clerks, grocery clerks, cashiers, and kindred workers.

Office and Clerical

Occupations in which workers are responsible for internal and external communications, recording and retrieval of data and/or information and other paper work required in an office predominantly non-manual, though some manual work not directly involved with altering or transporting the products is included.

Includes: Bookkeepers, cashiers, collectors (bills and accounts), messengers and office helpers, office machine operators, shipping and receiving clerks, stenographers, typists and secretaries, telegraph and telephone operators, court transcribers, hearing reporters, statistical clerks, dispatchers, license distributors, payroll clerks, and kindred workers.

Skilled Craft Workers

Occupations in which workers perform jobs which require special manual skill through on-the-job training and experience, or through apprenticeship or other formal training programs. These workers exercise considerable independent judgment and usually receive an extensive period of training.

Includes: The building trades, hourly paid foremen and leadmen who are not members of management, mechanics and repairmen, skilled machining occupations, compositors and typesetters, electricians, engravers, job setters

(metal), motion picture projectionists, pattern and model makers, stationary engineers, tailors, heavy equipment operators, carpenters, and kindred workers.

Operatives (semi-skilled)

Workers who operate machine or processing equipment or perform other factory-type duties of intermediate skill level which can be mastered in a few weeks and require only limited training.

Includes: Apprentices (auto mechanics), plumbers, bricklayers, carpenters, electricians, mechanics, building trades, metal workers, machinists, printing trades, operatives, attendants (auto service and parking), blasters, chauffeurs, deliverymen, dressmakers and seamstresses (except factory), dryers, furnacemen, heaters (metal), laundry and dry cleaning operatives, milliners, miners, motormen, oilers, greasers, etc. (except auto), painters (except construction and maintenance), photographic process workers, stationary firemen, truck and tractor drivers, weavers (textile), welders and flame cutters, and kindred workers.

Laborers (unskilled)

Workers in manual occupations which generally require no special training. These workers perform elementary duties that may be learned in a few days and require the application of little or no independent judgment.

Includes: Garage workers, car washers and greasers, gardeners (except farm) and groundskeepers, longshoremen and stevedores, lumbermen, craftsmen, and wood choppers, laborers performing lifting, digging, mixing, loading, and pulling operations, and kindred workers.

Service/Maintenance Workers

Occupations in which workers perform duties which result in or contribute to the comfort, convenience, hygiene or safety for the general public or which contribute to the upkeep and care of buildings, facilities or grounds, or public property. Workers in this group may operate machinery.

Includes: Chauffeurs, laundry and dry cleaning operatives, truck drivers, trash collectors, custodial personnel, gardeners and groundskeepers, construction laborers, attendants (hospital and other institutions), professional and personal service, counter and fountain workers, elevator operators, firemen and fire protection, guards, watchmen and doorkeepers, stewards, porters, waiters, and kindred workers.

# CERTIFICATION BY PROPOSED SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

_____
Name of Prime Contractor

_____
Address

## GENERAL

In accordance with Executive Order 11246 (30 F.R. 12319-25), the implementing rules and regulations thereof, and orders of the Secretary of Labor, a certification regarding Equal Opportunity is required of bidders or prospective contractors and their proposed subcontractors prior to the award of contracts or subcontracts.

## SUBCONTRACTOR'S CERTIFICATION

Subcontractor's Name: _____

Address: _____

IRS Employer Identification Number: _____

Job Description : _____

1. Participation in a previous contract or subcontract.

   a. Subcontractor has participated in a previous contract or subcontract subject to the Equal Opportunity Clause. ____YES ____NO

   b. Compliance reports were required to be filed in connection with such contract or subcontract. ____YES ____NO

   c. Subcontractor has filed all compliance reports required by Executive Orders 10925, 11114, 11246, or by regulations of the Equal Employment Opportunity Commission issued pursuant to Title VII of the Civil Rights Act of 1964. ____YES ____NO

   d. If answer of Item c. is "No", please explain in detail on reverse side of this certification.

2. Dollar amount of proposed subcontract: $ _____

3. Anticipated performance period in days: _____

4. Expected total number of employees to perform the proposed subcontract: _____

5. Nonsegregated facilities.

   a. Notice to prospective federally-assisted construction contractors
      (1) A Certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted to the Contractor prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.
      (2) Contractors receiving subcontract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity clause.

   b. Certification of non-segregated facilities

      The federally-assisted construction contractor certified that he/she does not maintain or provide any segregated facilities at any of his/her establishments, and does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The federally-assisted construction Contractor certifies further that he/she will not maintain or provide any segregated facilities at any of his/her establishments, and will not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The federally-assisted construction Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants, and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin because of habit, local custom, or otherwise. The federally-assisted construction Contractor agrees that (except where he/she has obtained identical certifications from proposed Subcontractors for specific time periods) he/she will obtain identical certifications in duplicate from proposed Subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that he/she will retain the duplicate of such certifications in his/her files. The Contractor will include the original in his/her Bid Package.

6. Race or ethnic group designation of bidder. Enter race or ethnic group in appropriate box:

☐ White ☐ Black ☐ Hispanic

☐ Pacific Islander, Asian ☐ American Indian, Aleut.

7. Gender

☐ Male ☐ Female

REMARKS: _

Certification - The information above is true and complete to the best of my knowledge and belief.

_____
Company Officer (Please Type)

_____ _____
Signature Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

## Certification by Proposed Material Suppliers, Lessors, and Professional Service Providers Regarding Equal Employment Opportunity

Company Name: _____ $_____
(Supplier, Lessor, Professional Service Provider) (Amount of Contract)

Company Address: _____

Company Telephone Number:_____ Fax:_____

E-mail Address: _____

Web Page/URL Address:_____

Company Tax Identification Number: _____

Project No.: [*WBS/CIP/AIP/File No.*]_____

Project Name: [*Legal Project Name*]_____

In accordance with the City of Houston Ordinance 78-1538, Supplier/Lessor/Professional Service Provider represents to be an equal opportunity employer and agrees to abide by the terms of the Ordinance. This certification is required of all Suppliers/Lessors/Professional Service Providers (herein Supplier) with contracts in the amount of $10,000.00 or more.

[ ] Yes [ ] No Supplier agrees not to discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age.

[ ] Yes [ ] No Supplier agrees that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin, or age.

[ ] Yes [ ] No Supplier will comply with all provisions of Executive Order No. 11246 and rules, regulations and applicable orders of the Department of Labor or other Federal Agency responsible for enforcement of applicable equal opportunity and affirmative action provisions and will likewise furnish all information and reports required by the Mayor or Contract Compliance Officers for the purpose of investigation to ascertain and effect compliance with the City of Houston's Office of Affirmative Action and Contract Compliance.

[ ] Yes [ ] No The Supplier shall file and cause their sub-tier contractors to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor or Contract Compliance Officers. Compliance reports filed at such times as directed shall contain information including, but not limited to, the practices, policies, programs, and employment policies.

I hereby certify that the above information is true and correct.

_____ _____
COMPANY OFFICER (Signature) DATE

_____
NAME AND TITLE (Print or type)

END OF DOCUMENT

Document 00808

# REQUIREMENTS FOR THE CITY OF HOUSTON PROGRAM FOR MINORITY, WOMEN, AND SMALL BUSINESS ENTERPRISES AND PERSONS WITH DISABILITIES ENTERPRISES (PDBE)

## CONSTRUCTION CONTRACTS

## I. GENERAL

### A. CITY AUTHORITIES

1. The "OBO Director" is the City of Houston's Office of Business Opportunity Director, or his or her designee.
   City of Houston
   611 Walker Street, 7th Floor
   Houston, Texas 77002

2. The "Contracting Department" for this Project is the City of Houston Department specified in Document 00520 – Agreement.

3. The "Project Manager" is for this Project specified in Document 00550 – Contract Approval Notification.

## II. REOCCURRING REPORTS THAT MUST BE SUBMITTED DURING THE COURSE OF THE CONTRACT:

### A. MWSBE MONTHLY REPORT PROCESS

The Contractor shall complete the MWSBE Monthly Utilization Report in the Contract Compliance and Monitoring System (available at https://houston.mwdbe.com/).

**B.** The Contractor shall comply with further, applicable instructions regarding reporting and compliance as provided in Sections III.E and III.I below.

## BUSINESS ENTERPRISE PROGRAM REQUIREMENTS:

**A.** PURPOSE

This Document facilitates implementation of City of Houston, Tex. Code of Ordinances Chapter 15, Article V, § 15-81 et seq., relating to MWSBE contract participation, and Code of Ordinances Chapter 15, Article VI, § 15-90 et seq., relating to PDBE contract participation (collectively, the "Business Enterprise Program or "MWSBE"). City of Houston, Tex. Ordinance 2013-0428, May 8, 2013.

**B.** POLICY

It is the policy of the City to encourage the full participation of Minority and Women-owned Business Enterprises, Small Business Enterprises, and Persons with Disabilities Business Enterprises in all phases of its procurement activities and to afford them a full and fair opportunity to compete for City contracts at all levels.

**C.** POLICY ELEMENTS

**1.** The Contractor agrees to ensure that MWSBE firms have a full and fair opportunity to participate in the performance of City contracts. In this regard the Contractor shall make all reasonable Good Faith Efforts to meet the Contract Goals for this Contract.

**2.** The Contractor and any Subcontractor shall not discriminate on the basis of race, color, religion, national origin, or sex in the performance of City contracts.

**3.** Contractor's performance in meeting the Participation Plan Percentage will be monitored during the construction phase of the Contract by the OBO Director and Contracting Department.

**D.** PERCENTAGE GOALS

The MWSBE goals and PDBE goals, if any, for the Work are specified in Document 00800 – Supplementary Conditions Goals.

## E. CONTRACTOR RESPONSIBILITIES

### 1. Prior to Award:

The Bidder shall submit MWSBE documents in accordance with the requirements of Document 00410 – Bid Form Part A.

**a.** In accordance with the Code of Ordinances and the OBO Good Faith Efforts Policy (Attachment A), the Department shall approve an Apparent Low Bidder's MWSBE Participation Plan–Document 00470 (the "Bidder's Plan" or "Plan") within 3 business days of the Bid Opening only if the Department representative determines that Bidder's Plan meets the advertised Contract Goal and is administratively complete.

**b.** If the Department cannot approve the Bidder's Plan, it shall forward the Plan to the OBO Director, who shall review the Bidder's Plan, and if applicable, the Bidder's Document 00471 (Record of Good Faith Efforts) and Document 00472 (Pre-Award Deviation Request) and determine whether the Bidder has made Good Faith Efforts to meet the Contract Goals within 10 business days of the Bid Opening.

**c.** If the OBO Director determines that the Bidder has failed to provide a valid participation plan or make Good Faith Efforts or if the Bidder fails to provide documents and associated information required by this Document 00808 or reasonably requested in writing by the OBO Director, the OBO Director may declare the Bidder to be non-responsible.

**d.** If the OBO Director determines that the Bidder has made Good Faith Efforts, the Director may approve the Bidder's Contract Goal Deviation request. Thereafter, the Bidder/Contractor shall be bound by the Plan, as approved by the OBO Director.

**e.** The Contractor shall:

**(1)** ensure that all MWSBE firms listed in the Plan are certified by the Office of Business Opportunity prior to bid date. Qualified, non-certified firms may obtain priority consideration for certification if no more than two firms are certified with the same capability as the non-certified firm.

**(2)** execute written contracts with all certified Subcontractors and Suppliers. All such contracts must be executed and sent to the OBO Director and Contracting Department within 30 days after the date of the Notice to Proceed and must include provisions set forth in Articles 3 and 5 of Document 00700 - General Conditions.

**(3)** designate an MWSBE liaison officer who will administer the Contractor's MWSBE program and who shall document and maintain records of Good Faith Efforts to subcontract with MWSBE Subcontractors and Suppliers.

### 2. After Award:

**a.** The Contractor shall submit MWSBE Monthly Utilization Reports, requested in Article II above.

**b.** The Contractor shall complete and submit to the OBO Director a Post-Award Deviation Request–Document 00572 ("Post-Award Deviation Request") if the Contractor reasonably believes that it will not achieve the Business Enterprise Program Participation Plan Percentage documented in the Plan. The Contractors shall also submit to the OBO Director, with a Copy to the Contracting Department, a Record of Post-Award Good Faith Efforts (Document 00571) for each Certified Firm that the Contractor does not use in accordance with the Approved Plan before the Contractor uses another firm to perform the work.

**c.** The Contractor shall conform to the Plan unless the OBO Director grants a Post-Award Deviation Request. The OBO Director shall approve or reject a Deviation Request within 5 business days of receipt of the Deviation Request.

**d.** The OBO Director shall grant a Post-Award Deviation Request if

**(1)** for a reason beyond the Contractor's control, the Contractor is unable to use the certified MWSBE firm in the Plan to perform the specified work. In such cases, the Contractor shall use and document Good Faith Efforts to find a similarly qualified, certified MWSBE firm to perform such specified work; or

**(2)** the Contractor reasonably believes that, due to a change of scope, execution of the work in accordance with the directions from the Contracting Department is unlikely to meet the terms of the Plan. In such cases, the Contractor shall use and document Good Faith efforts to achieve a reasonable amount of MWSBE participation on the remaining work on the Contract.

**(3)** The OBO Director shall not unreasonably withhold approval of a Post-Award Deviation Request.

**e.** After the Date of Substantial Completion, the OBO Director shall evaluate the Contractor's Good Faith Efforts towards meeting the Plan, as it may amended.

**f.** If the Contractor fails to conform to the Plan and fails to submit a Post-Award Deviation Request or provide documents and associated information required by the Good Faith Efforts Policy or reasonably requested in writing by the OBO Director, the OBO Director may impose sanctions in accordance with Article VI of this Document 00808.

**F.** ELIGIBILITY OF MWSBE FIRMS FOR SUBCONTRACTING

**1.** To ensure that the City's Business Enterprise Program benefits only those firms that are owned and controlled by a minority person(s), a woman (women),a person(s) with a disability, or a small business enterprise, the Office of Business Opportunity will certify the eligibility of MWSBE and PDBE Contractors, Subcontractors, and Suppliers. Contact the Office of Business Opportunity Certification Section at 832-393-0600 for information regarding certification.

**2.** The Office of Business Opportunity maintains a Certified Minority, Women and Small Business Enterprises and Disabilities Business Enterprises Directory on the City's website. This Directory also lists federally-designated Disadvantaged Business Enterprises (DBEs).

**NOTE: MWSBE firms, even if certified by another agency, may not qualify for Contract Goals unless certified by the Office of Business Opportunity prior to acceptance of the Participation Plan.**

**G.** DETERMINATION OF MWSBE PARTICIPATION

MWSBE participation shall be counted toward meeting the Contract Goals in response to the following:

**1.** Once a firm is certified as a MWSBE firm, the total dollar value of the subcontract awarded to the MWSBE firm is counted toward the Contract Goals (See Sections III.G.4 and III.G.5 below). Safety and Participation goals do not count as a single goal concerning MWSBE/DBE requirements.

**2.** When the Contractor or Subcontractor is in a joint venture with one or more MWSBE firms, the OBO Director shall determine the percent of participation resulting from such joint venture to be counted toward the Contract Goals.

**3.** Contractor may count toward its Contract Goals only those MWSBE Subcontractors/ Suppliers performing a Commercially Usefully Function.

**a.** **COMMERCIALLY USEFUL FUNCTION** means a discrete task or group of tasks, the responsibility for performance of which shall be discharged by the MWSBE firm by using its own forces or by actively supervising on-site the execution of the tasks by another entity for whose work the MWSBE firm is responsible. In determining whether a certified firm is performing a commercially useful function, factors including but not limited to the following shall be considered: (1) whether the firm has the skill and expertise to perform the work for which it is being utilized and possesses all necessary licenses; (2) whether the firm is in the business of performing, managing, or supervising the work for which it has been certified and is being utilized; and

(3) whether it is performing a real and actual service that is a distinct and verifiable element of the work called for in a contract. Without limiting the generality of the foregoing, a MWSBE will not be considered to be performing a commercially useful function, if it subcontracts to non-MWSBE firms or to other MWSBE firms, more than 50 percent of a contract being counted toward the applicable Contract Goals, unless such subcontracting in excess of 50 percent has been expressly approved by the OBO Director in a Goal or Plan Deviation Request (Document 00472 or Document 00572) (either pre-bid or post award).

**b.** The OBO Director shall approve a Plan Deviation Request if the Contractor demonstrates that the industry standard for the type of work involved is to subcontract over 50 percent of the work.

**4.** A MWSBE firm cannot subcontract more than 50 percent of the work for which it is responsible to perform unless the OBO Director grants a Deviation Approval.

**5.** The Contractor may count 100 percent of MWSBE Manufacturer Supplier's participation and 60 percent of MWSBE Non-Manufacturer Supplier's participation toward its Contract Goals. Such MWSBE Supplier contracts shall not exceed 50 percent of contract's goals.

**6.** The OBO Policy and Procedures Manual, as amended, shall apply to the Contract for other determinations regarding counting MWSBE participation not explicitly provided for in the Contract.

**H.** CONTRACTOR COMPLIANCE

To ensure compliance with MWSBE requirements, the OBO Director and Contracting Department will monitor Contractor's efforts regarding MWSBE Subcontractors/Suppliers during the performance of this Contract. This may be accomplished through the following: job site visits, reviewing of records and reports, and interviews of randomly selected personnel.

## I. RECORDS AND REPORTS

**1.** In accordance with II.A of this Document, the Contractor shall submit an initial report outlining MWSBE participation, 40 days after the Notice to Proceed date, and on or before the 15th day of each month thereafter until all MWSBE subcontracting or material supply activity is completed. Each report shall cover the preceding month's activity. The Contractor shall use the MWSBE Contract Compliance and Monitoring System (B2G Now) to meet this requirement.

**2.** Contractor shall maintain the following records for review upon request by the OBO Director or Contracting Department:

**a.** Copies of executed Subcontractor agreements and purchase orders;
**b.** Documentation of payments and other transactions with MWSBE Subcontractors/ Suppliers;
**c.** Appropriate explanations of any changes or replacements of MWSBE Subcontractors/Suppliers;

**NOTE: All replacement MWSBE Subcontractors/Suppliers must be certified by the Office of Business Opportunity.**

**d.** Any other records required by the OBO Director or Contracting Department.

**3.** If a Participation Plan Percentage is not being met, the monthly report shall include a narrative description of the progress being made in MWSBE participation. If sufficient MWSBE Subcontractors or Suppliers to meet the Participation Plan Percentage are being utilized, they should be identified by name and the dollar amount paid to date for work performed or materials furnished by each MWSBE during the monthly period. Reports are required when no activity has occurred in a monthly period.

**4.** Contractor shall retain all such records for a period of four years following completion of the Work and shall be available at reasonable times and places for inspection by authorized representatives of the City including the City Controller.

## IV. SANCTIONS:

### A. SUSPENSION PERIOD AND WAIVER

Pursuant to Section 15-86 of the Code of Ordinances, the OBO Director is authorized to suspend for a period of up to, but not to exceed, five years, any Contractor who has failed to make Good Faith Efforts.

**B.** GUIDELINES FOR IMPOSITION OF SANCTIONS

**1. General:**

**a.** The OBO Director shall not impose any sanction except upon evidence of specific conduct on the part of a MWSBE or Contractor that is inconsistent with or in direct contravention of specific applicable requirements for Good Faith Efforts.

**b.** Imposition and enforcement of suspensions shall be consistent with applicable state law.

**2. Severity of Sanctions:**

**a.** In determining the length of any suspension, the OBO Director shall consider the following factors:

**(1)** Whether the failure to comply with applicable requirements involved intentional conduct or, alternatively, may be reasonably concluded to have resulted from a misunderstanding on the part of the Contractor or MWSBE of the duties imposed on them by Article V of Chapter 15 of the Code of Ordinances and these procedures;

**(2)** The number of specific incidences of failure by Contractor or MWSBE to comply;

**(3)** Whether the Contractor or MWSBE has been previously suspended;

**(4)** Whether the Contractor or MWSBE has failed or refused to provide the OBO Director with any information requested by the Director or required to be submitted to the Director pursuant to law or these procedures;

**(5)** Whether the Contractor or MWSBE has materially misrepresented any applicable facts in any filing or communication to the OBO Director; and

**(6)** Whether any subsequent restructuring of the subject business or other action has been undertaken to cure the deficiencies in meeting applicable requirements.

**b.** Suspensions may be for any length of time not to exceed five years. Suspensions in excess of one year shall be reserved for cases involving intentional or fraudulent misrepresentation or concealment of material facts, multiple acts in contravention of applicable requirements, cases where the Contractor or MWSBE has been previously suspended, or other similarly egregious conduct.

**C.** DELEGATION

A decision to implement a suspension may be taken after notice and an opportunity for a hearing by an impartial person(s) designated by the OBO Director as the hearing officer.

The hearing officer(s) shall not have participated in the actions or investigations giving rise to the suspension hearing.

**D.** NOTICE

**1.** Prior to imposing any suspension, the OBO Director shall deliver written notice to the Contractor or MWSBE setting forth the grounds for the proposed suspension and setting a date, time, and place to appear before the hearing officer(s) for a hearing on the matter.

**2.** Any notice required or permitted to be given hereunder to any Contractor or MWSBE may be given either by personal delivery or by certified United States mail, postage prepaid, return receipt requested, addressed to their most recent address as specified in the records of the Office of Business Opportunity or in the Contract if no address is on file with the Office of Business Opportunity.

**E.** HEARING PROCEDURES

Proceedings before a hearing officer shall be conducted informally and in accordance with the OBO Policy and Procedures Manual, as amended, provided that each party may be represented by counsel and may present evidence and cross-examine witnesses. The City shall have the burden to prove by a preponderance of evidence that the Contractor's or MWSBE firm's actions constitute misconduct or failure to make Good Faith Efforts. The decision shall be reduced to writing and notice provided to the Contractor or MWSBE.

**F.** APPEALS

Appeals authorized pursuant to Section 15-86(b) of the Code of Ordinances shall be conducted by the OBO Director. Pursuant to Section 15-86(b), The contractor may appeal the OBO Director's decision in accordance with Section 15-23 of the Code of Ordinances and OBO Policy and Procedures.

ATTACHMENT A

# City of Houston
## Office of Business Opportunity
## Good Faith Efforts Policy

**General Policy.**

Good Faith Efforts are steps taken to achieve an Contract Goal or other requirements which, by their scope, intensity and usefulness demonstrates the bidder's responsiveness to fulfill the business opportunity objective prior to the award of a contract, as well as the contractor's responsibility to put forth measures to meet or exceed the Contract Goal throughout the duration of the contract.

Good Faith Efforts are required to be made and demonstrated by an apparent successful bidder on goal oriented contracts or proposer on a regulated contract prior to award of a contract. Good Faith Efforts are required on professional services and construction contracts and on procurement of goods and non-professional service contracts with goals. If a bidder, when submitting a participation plan at the time of bid or proposal submission, anticipates it cannot or will not meet the Contract Goal prior to the award, the bidder must demonstrate to Office of Business Opportunity ("OBO") it has made Good Faith Efforts to meet the Contract Goal, to be eligible for the contract award.

Good Faith Efforts shall be evaluated on a case-by-case basis in making a determination whether a bidder or contractor is in compliance with this policy. The efforts employed by a bidder or contractor should be those that one could reasonably expect a bidder or contractor to take if the bidder were actively and aggressively attempting to obtain MWSBE participation sufficient to meet the Contract Goal. Efforts taken that are mere formalities or other perfunctory acts shall not be considered Good Faith Efforts to meet Contract Goals.

The factors provided herein are representative of the types of actions OBO will consider in determining whether the bidder or contractor made Good Faith Efforts to obtain MWSBE participation to meet the Contract Goal. The factors prescribed below are not intended to be a mandatory checklist, nor is it intended to be exhaustive or exclusive. OBO may consider other factors or types of efforts that may be relevant in appropriate cases.

If a contractor fails to submit Good Faith Efforts documentation as provided in this Policy, it waives the right to appeal OBO decisions related to this Policy. OBO will review all the efforts made by the contractor, including the quality and quantity of those efforts.

**Pre–Award.**

A bidder must submit a participation plan (Document 00470) to OBO at the time the bidder submits the bid. If the participation by certified MWSBE subcontractors documented on the participation plan ("participation") is less than the Contract Goal, a bidder should submit a Record of Good Faith Efforts (Document 00471) with the bid. A bidder should also submit a request for a deviation (Document 00472) if the bidder, having used Good Faith Efforts, reasonably believes that it cannot meet the Contract Goal or a commercially useful deviation.

In making a determination that the bidder has made a good faith effort to meet the Contract Goals, OBO shall consider specific documentation concerning the steps taken to obtain MWSBE participation, with a consideration of, by way of illustration and not limitation, whether the bidder demonstrated a genuine effort to comply with the following factors:

1. Attended any pre-bid or pre-proposal meetings scheduled by the City Department;

2. Followed up with MWSBEs that attended the pre-bid or pre-proposal meetings to discuss subcontracting and supplier opportunities and contacted MWSBEs listed in the City's online directory;

3. Conducted outreach with minority and women focused organizations and associations far in advance of solicitation due date (no less than 10 business days);

4. Identified and designated portions of the work to be performed by MWSBEs to increase the likelihood of meeting the Contract Goals (including where appropriate breaking down the contract into reasonably sized subcontracts to ensure participation);

5. Advertised subcontracting opportunities in news media focused towards minority and women persons far in advance of solicitation due date;

6. Provided MWSBEs with a point of contact that was knowledgeable about the project and possessed decision-making authority to answer questions from interested MWSBEs;

7. Provided a reasonable number of MWSBEs certified with timely written notices via email, mail, and/or fax and/or with documented contact regarding the subcontracting/supplier opportunities. A "reasonable number of MWSBEs" shall be based on the number of MWSBEs available in the directory;

8. Solicited the MWSBEs within a reasonable amount of time (no less than seven business days) before bid submission, as well as followed up with the MWSBEs solicited to determine if they were interested in submitting a bid or proposal or participating on a team.

9. Provided interested MWSBEs certified to perform the solicited work with prompt access to the plans, specifications, scope of work and requirements of the contract;

10. Negotiated in good faith with interested MWSBEs, and not rejecting MWSBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;

11. Entered into a formal contract, or signing enforceable letters of intent with MWSBEs;

12. Provided an explanation to any MWSBE whose bid or price quotation is rejected, unless another MWSBE is accepted for the same work, as follows:
    a. Where price competitiveness is not the reason for rejection, a written rejection notice including the reason for rejection will be sent to the rejected MWSBE firm;
    b. Where price competitiveness is the reason for rejection, a meeting must be held with the price-rejected MWSBE, if requested, to discuss the rejection;

13. Made efforts to assist interested MWSBEs in obtaining bonding, lines of credit, insurance required for the contract, and documenting MWSBE denied by bona fide surety agents;

14. Ensured that the conditions and requirements for subcontracts are commensurate with industry standards and would not cause an economic hardship on MWSBEs, such as unnecessary insurance or coupling bid bonds with retainage;

15. Incorporated efforts not attempted earlier or on previous bids that appear more likely to lead to attaining the Contract Goal. Past performance on similar contracts with similar scopes will also be taken in consideration when determining Good Faith Efforts. A bidder that continues to make same efforts without any significant change in the level of participation may not be making Good Faith Efforts.

**Post–Award.**

The contractor must sign the approved participation plan (Document 00470 or Document 00570) prior to starting work on the Project. A contractor should submit a request for deviation (Document 00572) from OBO if the contractor, having made Good Faith Efforts, reasonably believes that it will not achieve the Participation Plan Percentage documented in the approved participation plan. Unless OBO approves a deviation, a contractor must submit to OBO a Participation Summary (Document 00660) prior to City Council's consideration of any close-out, term extension, or change order. If participation is less than anticipated in the approved participation plan, the contractor must submit a Record of Good Faith Efforts (Document 00571) along with the Participation Summary. A contractor that fails to submit a deviation request and Good Faith Efforts documentation waives the right to appeal OBO decisions related to this Policy.

If the contractor is awarded the contract and fails to achieve the established Participation Plan Percentage, the contractor must demonstrate to OBO its efforts to meet the Participation Plan Percentage and failure to do so based on circumstances that the contractor could not reasonably control. In determining whether the contractor made Good Faith Efforts to ensure full participation and achievement of the Participation Plan Percentage, OBO shall consider the following factors:

1. Whether the contractor designated an MWSBE liaison officer to administer the Contractor's MWSBE programs and to be responsible for maintenance of records of Good Faith Efforts.

2. Whether the contractor furnished prompt MWSBE Utilization Reports in a timely and accurate manner through the online Contract Monitoring System or via hard copy.

3. Whether the contractor responded to efforts to resolve disputes with MWSBEs, and genuinely attempted to resolve these issues.

4. Whether the contractor disclosed payment discrepancies timely and within the monthly reporting period;

5. Whether the contractor complied with the participation plan, unless the contractor received a deviation from the OBO Director and whether upon approval, the contractor made Good Faith Efforts to replace a removed MWSBE with another certified firm;

6. Whether the contractor furnished prompt written responses to written inquiries from the Director or any employee of OBO regarding the MWSBE's performance or information germane to the MWSBE's certification;

7. Whether the contractor ensured that at all times during the performance of any contract or subcontract the MWSBE firm is engaging in a commercially useful function as that term is defined in Chapter 15 of the City of Houston Code of Ordinances;

8. Whether the contractor provided the OBO information, or other material, that was factually accurate and free of material misrepresentation; and

9. Whether the contractor furnished prompt responses to requests for information, books and records needed to verify compliance from the department administering the Contract, the City Attorney and the City Controller;

10. Whether the contractor attended all meetings and mediation hearings as requested by the Director or his/her designee; and

11. How the contractor may be affected by change orders, with consideration given to the size of the change orders.

**Change Orders.**

The requirement to make Good Faith Efforts to achieve the approved Participation Plan Percentage is applicable to change orders. Contractors should make Good Faith Efforts to ensure that the Participation Plan Percentage remains substantially the same after the issuance of change orders. If a contractor cannot maintain substantially the same level of participation provided in the latest approved Participation Plan (Document 00470 or Document 00570) due to a change order, the contractor shall submit to the OBO Director and Contracting Department a Document 00571 (Post-Award Record of Good Faith Efforts) and Document 00572 (Post-Award Plan Deviation Request) in a timely manner that does not cause disruption to the project. In addition to other relevant factors, in evaluating whether Good Faith Efforts were made by the contractor to meet the Participation Plan Percentage despite change orders, the OBO Director shall consider the contractor's efforts to timely and efficiently deliver the project.

END OF DOCUMENT

**Document 00820**

# WAGE SCALE AND PAYROLL REQUIREMENTS FOR ENGINEERING CONSTRUCTION

## Wage Scale Requirements

1.1 Contractor and its Subcontractors must pay the general prevailing wage rates for building construction for each craft or type of worker or mechanic employed in the execution of any building construction or repair under the Contract in accordance with Chapter 2258 of the Texas Government Code and City of Houston, Texas Ordinance Nos. 85-2070, 2000-1114, 2001-152, 2006-91 and 2006-168, and 2009- 247 all as amended from time to time. City Council has determined the prevailing wage rate in the locality in which the work is being performed, which is set forth in Exhibit "A".

1.2 This prevailing wage rate does not prohibit the payment of more than the rates stated.

1.3 In bidding, Contractor warrants and represents that it has carefully examined the classifications for each craft or type of worker needed to execute the Contract and determined that such classifications in Exhibit "A" include all necessary categories to perform the work under the Contract.

1.4 The wage scale for engineering construction is to be applied to all site work greater than five feet from an exterior wall of new building under construction or from an exterior wall of an existing building.

1.5 If Contractor believes that an additional classification for a particular craft or type of worker is necessary to perform work under the Contract, it must submit with its bid a request to the Contract Compliance Division of the Office Of Business Opportunity ("OBO") to use an additional labor classification not listed in Exhibit "A" and specify the proposed new classification. OBO shall determine whether a proposed classification is already covered in Exhibit "A", and, if it is, specify which classification is appropriate. OBO's decision is conclusive. If OBO decides that a new classification is necessary, it will determine the appropriate prevailing wage rate for any resurveyed, amended, new, or additional craft or type of worker not covered by Exhibit "A". Such determination must be decided in accordance with procedures established by OBO, and in compliance with Chapter 2258 of the Texas Government Code and City of Houston, Texas Ordinance Nos. 85-2070, 2000-1114, 2001-152, 2006-91, 2006-168 and 2009-247 subject to City Council approval.

1.6 Contractor must not use any labor classification not covered by Exhibit "A" until such classification is established and approved for use by OBO.

1.7 A Contractor or Subcontractor who violates Chapter 2258 of the Texas Government Code must pay to the City, $60 per each worker employed for each calendar day or part of the day that the worker is paid less than the wage rates set forth in Exhibit "A".

1.8 The City may withhold money required to be withheld under Chapter 2258 of the Texas Government Code from the final payment to Contractor or earlier payments if City Council makes a determination that there is good cause to believe that Contractor has not complied with these provisions and Chapter 2258 of the Government Code, in which case the City may withhold the money at any time subsequent to the finding by City Council.

1.9 Contractor and Subcontractors must keep records specifying:

(1) the name and classification of each worker employed under the Contract; and

(2) the actual per diem wages paid to each worker, and the applicable hourly rate.

The records must be open at all reasonable hours for inspection by the officers and agents of the City.

1.10 The hourly cost of salary for non-exempt workers for labor in excess of 40 hours per worker per week, shall be calculated at 1.5 times the worker's base pay, plus 1.0 times fringe benefits, for the applicable craft and level.

## Certified Payroll Requirements

2.1 Employees are paid weekly and payrolls are submitted weekly using the City of Houston's electronic payroll submission module, unless the prime Contractor has been instructed to do otherwise by the Office of Business Opportunity. When no work is done after a Contractor has started work, the Contractor is required to submit a weekly compliance statement indicating no work was performed. The payrolls must reflect the exact work and classification of the workers, the exact amount that they were paid. Workers must be paid the contracted amount (prevailing wage rates). The Contractor will be penalized $60.00 a day for each employee who is underpaid per Texas Government Code §2258-023 for all contracts.

2.2 Payrolls must be submitted electronically & indicate whether the worker worked inside or outside the building area when both wage rates are applicable to the contract.

2.3 Payrolls must be submitted each week until all work by the contractor is complete and the electronic payroll submission is marked as final in the system.

2.4 Payrolls must cover a seven day period from the start of the work week and must be consecutive seven day periods until all work is complete.

2.5 Payrolls must have employees' names, addresses, last four digits of the social security numbers, and job classifications. The job classifications must be the same as the classifications on the prevailing wage rate schedule.

2.6 A payroll deduction authorization form must be submitted for each employee for any deductions other than Federal and FICA taxes.

2.7 Employees must be paid overtime (time and a half) for all hours worked over 40 hours a week on both federally and City-funded contracts.

2.8 The Contractor has the responsibility to comply with all Internal Revenue Service rules and regulations. Contractors who submit certified payrolls with **Owner Operators (truckers)** must submit a signed tax liability statement from Owner Operator acknowledging their responsibility for Federal Income Tax and FICA reporting obligations.

2.9 If the Contractor wants to use the apprentice wage rates for an employee, the apprenticeship certificates must be submitted to the Office of Business Opportunity in advance of the employee working on the project and appearing on the payroll. You must comply with the listed number of journeymen to apprentices as listed.

2.10 A poster of the Prevailing Wage Rate Schedule should be clearly displayed on each job site from the time the project starts until the work is completed, or in case of annual service agreements, in the Contractor's office.

2.11 The Contractor shall submit the "Certificate from Contractor Appointing Officer or Employee to Supervise Payment of Employees" (Exhibit "B") to the Monitoring Authority listed in Document 00495 prior to final execution of the contract.

2.12 During the course of the work, ALL Subcontractors shall submit the "Certificate from Subcontractor Appointing Officer or Employee to Supervise Payment of Employees" (Exhibit "C") to the Monitoring Authority listed in Document 00495.

2.13 Upon completion of the Project, as part of the contract-awarding department's total clearance process, the Office of Business Opportunity's Contract Compliance Section must review whether the Wage Rate and Payroll Requirements were met and report the results to the department.

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## EXHIBIT "A"

LABOR CLASSIFICATIONS AND PREVAILING WAGE RATES FOR ENGINEERING CONSTRUCTION 2015

| CLASSIFICATION | RATE | CLASSIFICATION | RATE |
|---|---|---|---|
| Asphalt Distributor Operator | $14.06 | Milling Machine Operator - Fine Grade | $13.53 |
| Asphalt Paving Machine Operator | $14.32 | Mixer Operator | $10.33 |
| Asphalt Raker | $12.36 | Motor Grader Operator- Rough | $14.23 |
| Asphalt. Shoveler | $11.68 | Motor Grader Operator | $15.69 |
| Broom or Sweeper Operator | $12.68 | Oiler | $12.12 |
| Bulldozer Operator | $11.81 | Painter-Structures | $18.62 |
| Carpenter- Rough | $12.49 | Pavement Marking Machine Operator | $11.18 |
| Concrete Finisher- Paving | $12.98 | Pile Driverman | $14.95 |
| Concrete Finisher- Structures | $12.98 | Pipe Layer | $12.12 |
| Concrete Paving Curbing Machine Operator | $11.71 | Reinforcing Steel Setter - Paving | $15.15 |
| Concrete Paving Finishing Machine Operator | $13.07 | Reinforcing Steel Setter - Structure | $14.39 |
| Concrete Paving Joint Sealer Operator | $11.00 | Roller Operator, Pneumatic - Self-propelled | $11.57 |
| Concrete Paving. Saw Operator | $13.99 | Roller Operator, Steel Wheel, Flat Wheel/Tamping | $11.57 |
| Concrete Paving Spreader Operator. | $10.44 | Roller Operator, Steel Wheel, Plant Mix Pavement | $11.92 |
| Concrete Rubber . . . | $9.00 | Scraper Operator | $13.47 |
| Crane Clamshell Backhoe Derrick, Dragline, Shovel Operator | $12.71 | Servicer | $13.97 |
| Crusher and Screening Plant Operator | $11.29 | Sign Installer - PGM | $8.54 |
| **Electrician * 3 Journeyman 2 Apprentice Allowed** | $27.11 | Slip Form Machine Operator | $11.07 |
| Flagger | $10.33 | Spreader Box Operator | $13.58 |
| Form Builder/Setter- Structures | $12.23 | Structural Steel Worker | $14.39 |
| Form Liner- Paving and Curb | $12.34 | Tractor Operator - Crawler Type | $13.68 |
| Form Setter- Paving and Curb | $12.34 | Tractor Operator- Pneumatic | $10.07 |
| Foundation Drill Operator - Crawler Mounted | $17.43 | Transit Mixer Truck Driver | $11.00 |
| Foundation Drill Operator - Truck Mounted | $15.89 | Truck Driver, Lowboy-float | $16.03 |
| Front Loader Operator | $13.17 | Truck Driver, Single-Axle - Heavy | $11.46 |
| Laborer Common | $11.02 | Truck Driver, Single-Axle - Light | $11.48 |
| Laborer- Utility | $11.73 | Truck Driver, Tandem Axle Semi-Trailer | $12.27 |
| Manhole Builder | $9.00 | Work Zone Barricade Servicer | $11.67 |
| Mechanic | $16.96 | eceive rate prescribed for craft performing operation to which welding is incidental | |
| * Apprentices- must be in an approved USDOL Program and cannot exceed ratios | | | |

## Engineering Prevailing Wages Classification Definitions

**Asphalt Distributor Operator**
Drives distributor truck, sets spray bars and operates valves and levers to control distribution of bituminous material for highway surfacing. May oil, grease or otherwise service and make adjustments to equipment as needed. Performs other related duties.

**Asphalt Paving Machine Operator**
Operates paving machine that spreads and levels asphaltic concrete on highway subgrade. Controls movement of machine, raises and lowers screed, regulates width of screed. May, oil, grease, service and make adjustments to equipment as needed. Performs other related duties.

**Asphalt Raker**
Distributes asphaltic materials evenly over road surface by raking and brushing material to correct thickness; directs Laborers when to add or take away material to fill low spots or to reduce high spots. Performs other related duties.

**Asphalt Shoveler**
A general term used on construction work covering many unskilled classifications requiring work of a physical nature. A laborer works with all crews doing everything from pick and shovel work to cleaning up lumber with hammer, shoveling and placing concrete, uses air tools, cleans concrete joints and fills joints with sealing compound from bucket or with hose and nozzle from a central source, applies coating of oil to inside face of forms, may help set and strip forms, unloads and transports reinforcing steel, cures newly poured concrete, helps lower pipe into ditch for pipelayers, builds fences, works with dirt crew keeping construction layout stakes out of the way of dirt moving equipment.

**Broom or Sweeper Operator**
Operates a self-propelled machine to sweep and clean roadway surfaces. May oil grease, service and make adjustments to equipment as needed. Performs other related duties.

**Bulldozer Operator**
Operates a crawler tractor with a bulldozer mounted in front of chassis to level, distribute and push earth or other material. May operate a ripper attachment to break up rock or other hard material. May use a push block on front of tractor to push load scrapers. May oil, grease, or otherwise service and make minor repairs to equipment as needed. Performs other related duties.

**Carpenter, Rough**
Works from plans to build, assemble, fit together, align, plum, and set in place forms for molding concrete structures. Forms may be wood, steel, aluminum, fiberglass or any other type of material. Checks form while concrete is placed. May install miscellaneous materials integral to concrete structures. May set precast concrete elements. Prepares for slipforming traffic rail and median barrier. May install permanent metal deck forms. May work with power tools Performs other related duties.

**Concrete Finisher, Paving**
Finishes the exposed surfaces of fresh concrete paving, median barrier and every element of concrete structures to the final grade and contour structures to the final grade and contour with the use of straight edges and steel trowels. Operates bridge deck finishing machine. Finishes concrete curbs and gutters. Finishes exposed surface of concrete after forms have been removed by patching imperfections with fresh concrete, rubbing surface with abrasive stone, and directing others in removing excess or defective concrete with power tools. Performs other related duties.

**Concrete Finisher, Structures**
A worker semi-skilled in concrete finishing who assists Concrete finisher by performing specific or general duties of lesser skill and keeping Concrete Finisher supplied with materials, tools, and supplies; cleaning working area an equipment; and holding materials and tools. Performs other related duties.

**Concrete Paving Curbing Machine Operator**
Operates self - propelled machine(s) which may or may not travel on concrete paving forms, spreading and leveling fresh concrete to grade by use of augers and screeds. May oil, grease or otherwise service and make adjustments to equipment as necessary. Performs other related duties.

**Concrete Paving Finishing Machine Operator**
Operates self - propelled machine(s) which may or may not travel on concrete paving forms, spreading and leveling fresh

concrete to grade by use of augers and screeds. May oil, grease or otherwise service and make adjustments to equipment as necessary. Performs other related duties.

**Concrete Paving Joint Sealer Operator**
Cleans and seals joints requiring a hot or cold sealing compound in concrete paving, sidewalks, driveway and approach slabs. May oil, grease or make necessary repairs adjustments to equipment as needed. Performs other related duties.

**Concrete Paving Saw Operator**
Operates a water-cooled power saw with either or an abrasive blade to saw expansion and contraction joints in concrete paving. May also be used to saw asphaltic pavements. May oil grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Concrete Paving Spreader Operator**
Operates self - propelled machine(s) which may or may not travel on concrete paving forms, spreading and leveling fresh concrete to grade by use of augers and screeds. May oil, grease or otherwise service and make adjustments to equipment as necessary. Performs other related duties.

**Concrete Rubber**
Finishes the exposed surface of concrete masonry after the forms have been removed by patching holes and broken corners with fresh concrete, rubbing surface with abrasive stone to remove rough spots, and removing high spots and defective concrete with hand chisel and hammer or pneumatic chisel and powered abrasive stone. Performs other related duties.

**Crane, Clamshell, Backhoe, Derrick, Dragline, Shovel Operator**
A worker who operates a lattice boom type crane can hoist and move materials, raise and lower heavy weights and perform other related operations. May be crawler type or rubber tired. May include placement of rock riprap, clamshell, dragline, pipe and pile driving operations. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Crusher and Screed Plant Operator**
Operates a crusher or screening plant through which rock is run to break it into crushed stone for construction or to control flow of materials not needed. May include minor repairs and may service and make necessary adjustments to equipment as needed. Performs other related duties.

**Electrician *3 Journeyman 2 Apprentice**
Plans and directs the layout of metal electrical conduit, installs wiring systems, switch-panels, buss bars, works on overhead distribution systems and underground distribution systems. Performs other related duties.

**Flagger**
A worker who directs traffic in or around a construction site. May use signs or devices to direct traffic. May help assemble, position and clean devices or equipment used to direct traffic. Must be able to effectively communicate with the public. May require certain level of training by TXDOT specifications. Performs other related duties.

**Form Builder/Setter, Structures**
Fits together, aligns and sets to grade metal and wooden forms for placement of concrete. Forms may be wood, steel, aluminum, fiberglass or any other type of material. Checks forms while concrete is placed. May install miscellaneous materials integral to concrete structures. May set precast concrete elements. Prepares for slipforming traffic rail and median barrier. May install permanent metal deck forms. May work with power tools. Performs other related duties.

**Form Liner, Paving & Curb**
Fits together, panels align and sets to grade metal and wooden forms for placement of concrete. Works with survey crew to set stringline for panels or moles. Performs other related duties.

**Form Setter, Paving & Curb**
Fits together, align and set to grade metal and wooden forms for placement of concrete paving and curbs. Works with survey crew to set stringline for paving, curb and gutter curb. Performs other related duties.

**Foundation Drill Operator, Crawler Mounted**
Operates a hole-drilling machine that is crawler mounted. May include geotechnical operations such as soils nails, rock nails, tiebacks, anchors and jet grouting. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Foundation Drill Operator, Truck Mounted**
Operates a hole drilling machine that is mounted on the rear of a rubber tired vehicle or truck. May include soils nails, rock nails, tiebacks, anchors and jet grouting. Drive truck from location to location or may have laborer who drives truck. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Front End Loader Operator**
Operates a rubber tired, skid steer or crawler type tractor with an attached scoop type bucket on front end. Machine is used to load materials from stockpiles, excavation, charging batch plants, loading and unloading trucks. May be used with attachments in lieu of the bucket. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Laborer, Common**
A general term used on construction work covering many unskilled classifications requiring work of a physical nature. A laborer works with all crews doing everything from pick and shovel work to cleaning up lumber with hammer, shoveling and placing concrete, uses air tools, cleans concrete joints and fills joints with sealing compound from bucket or with hose and nozzle from a central source, applies coating of oil to inside face of forms, may help set and strip forms, unloads and transports reinforcing steel, cures newly poured concrete, helps lower pipe into ditch for pipelayers, builds fences, works with dirt crew keeping construction layout stakes out of the way of dirt moving equipment.

**Laborer, Utility**
Performs a variety of manual duties, usually working in a utility capacity by working on multiple projects and tasks where demands require workmen with varied experience and ability to work without close direction. Unloads and transports reinforcing steel. May occasionally place and tie reinforcing steel. Directs common laborers in pouring concrete. Erects shoring and bracing. Assists in installation of pipe. Installs, operate and maintains dewatering systems. May assist equipment operators in positioning machines, verifying grades and signaling operators. Directs truck drivers and scraper operators to dumping positions to maintain grades as directed. Uses power tools and air tools. May work as lead man in a labor crew. His performance of a wide variety of construction jobs distinguishes him from a helper assigned to a specific craft. Installs and maintains erosion control. Is more or less a general utility construction worker. May be second step in learning a skill, and may later become a helper in a specific classification. Performs other related duties.

**Manhole Builder**
Constructs a means of permanent access to water and sewer lines for maintenance purposes. This work consists of laying brick or concrete slab at bottom of ditch up to an approximate grade line near the surface of the ground. Brick or block is normally laid to form a nearly circular manhole. Brick or block is laid in by eyesight and is normally to a plumb line. Chipped or culled brick can be used quite often is. No effort may be made to keep mortar off the face of the brick and joints are not pointed. May apply coating of concrete to interior and exterior surface. Performs other related duties.

**Mechanic**
Assembles, set up, adjusts and maintains and repairs all types of construction equipment and trucks. He may perform the duties of a welder in repair of equipment. Performs other related duties.

**Milling Machine Operator, Fine Grade**
Operates a power-driven milling machine that planes material of the to roadbed and discharges the material into a hauling unit or a windrow. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Mixer Operator**
Performs a variety of manual duties, usually working in a utility capacity by working on multiple projects and tasks where demands require workmen with varied experience and ability to work without close direction. Unloads and transports reinforcing steel. May occasionally place and tie reinforcing steel. Directs common laborers in pouring concrete. Erects shoring and bracing. Assists in installation of pipe. Installs, operate and maintains dewatering systems. May assist equipment operators in positioning machines, verifying grades and signaling operators. Directs truck drivers and scraper operators to dumping positions to maintain grades as directed. Uses power tools and air tools. May work as lead man in a labor crew. His performance of a wide variety of construction jobs distinguishes him from a helper assigned to a specific craft. Installs and maintains erosion control. Is more or less a general utility construction worker. May be second step in learning a skill, and may later become a helper in a specific classification. Performs other related duties.

**Motor Grader Operator, Rough**
Operates a motor grader. Equipment is used to grade excavation and embankment and to lay asphalt, base and other materials. May blade haul roads and do other general motor grader work, but does not perform finish grade work to close

specification tolerances. This operator may be a learner in the first phase of learning the skills of motor grader work. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Motor Grader Operator**
Operates a motor grader. Equipment is used to grade excavation and embankment and to lay asphalt, base and other materials. May blade haul roads and do other general motor grader work, but does not perform finish grade work to close specification tolerances. This operator may be a learner in the first phase of learning the skills of motor grader work. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Oiler**
A learner or semi-skilled worker who under the direction of the watch engineer. May oil and grease or otherwise service all engines and necessary equipment as needed. He may clean and paint engine room as needed. Performs other related duties.

**Painter, Structures**
Paints and stains structural steel and concrete surfaces of bridges, retaining walls, or other structures. Directs cleaning and abrasive blasting of surfaces prior to painting or staining. Performs other related duties.

**Pavement Marking Machine Operator**
Operates machine used in laying paint stripes or markers on all types of paving. Loads machine with appropriate materials and may walk or ride on machine. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Piledriverman**
Sets in place, aligns, plumbs directs driving of timber, concrete, steel, pipe and any other type of piling. Sets, drives and pulls steel, concrete and other types of sheet piling. Rigs pile and leads and bracing. Signals operator. Splices piles before and after driving. Directs pile cutoff. May direct jetting or drilling equipment in connection with installing piles to grade. Performs other related duties.

**Pipelayer**
Installs concrete, clay, steel, ductile iron, plastic, corrugated pipe and any other type of pipe for storm drainage, water lines, gas lines and sanitary sewer lines. Lays underground communication and electrical ducts. May install and set electrical ground boxes, hand holes, manholes, inlets and other structures. Caulks joints, makes threaded and flanged connections. Installs valves and other accessories. Performs other related duties.

**Reinforcing Steel Setter, Paving**
Works from plans to lay out and install reinforcing steel within forms or in mats of concrete paving. May direct unloading of material. Determines rigging required to complete work. Gives direction to reinforcing steel worker (helper) or common or utility laborers. May install miscellaneous materials integral to concrete structure or paving. May work with power tools. Performs other related duties.

**Reinforcing Steel Setter, Structure**
Works from plans to lay out and install reinforcing steel within forms or in mats of concrete paving. May direct unloading of material. Determines rigging required to complete work. Gives direction to reinforcing steel worker (helper) or common or utility laborers. May install miscellaneous materials integral to concrete structure or paving. May work with power tools. Performs other related duties.

**Roller Operator, Pneumatic, Self-Propelled**
Operates a self-propelled machine with either steel wheels pneumatic tires, which is used to compact and smooth all bituminous materials. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Roller Operator, Steel Wheel, Flat Wheel/Tamping**
Operates a self-propelled machine with either steel wheels or pneumatic tires which is used to compact earth fills, subgrade, flexible base and all other types of materials except bituminous. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Roller Operator, Steel Wheel, Plant Mix Pavement**
Operates a self-propelled machine with either steel wheels pneumatic tires, which is used to compact and smooth all bituminous materials. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Scraper Operator**
Operates a self-contained wheeled tractor scraper both self loading or assisted by crawler tractors or other scrapers. Used to excavate and transport earth or other materials. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Servicer**
Drives a truck, which carries various fuels, oils, greases and filters. Must have knowledge of and is responsible for the correct oiling and greasing and changing of filters on equipment according to the manufacturers' specifications. Uses compressed air grease guns, wrenches and other tools. May make adjustments to clutches, brakes and other mechanical items. Keeps record of service preventive maintenance records. May have laborer assisting him. May require CDL if driving truck on public highways. Performs other related duties.

**Sign Installer (PGM)**
Sets forms, reinforcing steel, anchor bolts and pours concrete for Sign foundations. Fabricates and erects pipe and angle Frameworks by bolting, welding or other means prior to installation of signs that are normally prefabricated. Works from plans in location and drilling holes for proper location and alignment of signs. May direct hoisting of signs into place. Fastens signs to framework by bolting and other means. Locates and sets lighting brackets. May perform other work associated with signing projects. Supervises sign erector helper. Performs other related duties.

**Slip Form Machine Operator**
Cleans and seals joints requiring a hot or cold sealing compound in concrete paving, sidewalks, driveway and approach slabs. May oil, grease or make necessary repairs adjustments to equipment as needed. Performs other related duties.

**Spreader Box operator**
Operates spreader box by adjusting hopper and strike off blade so that the gravel, stone or other material may be spread to a specific depth on road surface during seal coat and surface treatment operations. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Structural Steel Worker**
Works from plans to lay out and install reinforcing steel within forms or in mats of concrete paving. May direct unloading of material. Determines rigging required to complete work. Gives direction to reinforcing steel worker (helper) or common or utility laborers. May install miscellaneous materials integral to concrete structure or paving. May work with power tools. Performs other related duties.

**Tractor operator, Crawler Type**
Operates a crawler tractor with a bulldozer mounted in front of chassis to level, distribute and push earth or other material. May operate a ripper attachment to break up rock or other hard material. May use a push block on front of tractor to push load scrapers. May oil, grease, or otherwise service and make minor repairs to equipment as needed. Performs other related duties.

**Tractor Operator, Pneumatic**
Operates a gasoline or diesel powered agricultural tractor that tows compaction rollers, plow, disc. water tanks, scrapers and other similar operations. May use other miscellaneous attachments. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

**Traveling Mixer Operator**
Drives a gasoline or diesel truck upon which is mounted a concrete mixer. Operates concrete mixer and dumps concrete on the grade, into forms or into concrete pumps or buckets. Cleans mixer drum. May require CDL license for on highway use. May service and make necessary adjustments for proper operation of equipment. Performs other related duties.

**Truck driver, lowboy-Float**
Drives a heavy-duty diesel powered truck to which is attached a trailer upon which heavy equipment is hauled. Driver is often required to operate heavy equipment to load or unload the lowboy. May require CDL license for on highway use. May service and make necessary adjustments for proper operation of equipment. Performs other related duties.

**Truck driver, Single Axle, Heavy**
Drive a light capacity truck for transporting loads of construction material. The truck is of single rear axle type, may have various kinds of beds attached, such as dump, flat bed, tank, etc. May require CDL license for driving on highway. May services and make necessary adjustments for proper operation equipment. Performs other related duties.

**Truck driver, Single Axle-Light**
Drive a light capacity truck for transporting loads of construction material. The truck is of single rear axle type, may have

various kinds of beds attached, such as dump, flat bed, tank, etc. May require CDL license for driving on highway. May services and make necessary adjustments for proper operation equipment. Performs other related duties.

**Truck Driver, Tandem Axle, Semi-Trailer**
Drives a diesel-powered tractor pulling a semi trailer hauling materials. Hauls dirt, rock, aggregates or other material. May require CDL license for driving on highway. May service and make necessary adjustments for proper operation of equipment. Performs other related duties.

**Work Zone Barricade Servicer**
Fabricates, erects and maintains temporary traffic control devices, including arrow boards, signs, barricades, channelizing devices, barrels and all message boards. May operates a truck during traffic control operations.

**WELDERS** - Receives rate for craft being performed to which welding is incidental.

## EXHIBIT "B"

CERTIFICATE FROM CONTRACTOR APPOINTING OFFICER OR EMPLOYEE TO SUPERVISE PAYMENT OF EMPLOYEES

Project Name _____

_____

Project WBS#:_____Date_____

(I) (We) hereby certify that (I am) (we are) the **Prime Contractor** for _____

_____
(specify type of job)

in connection with construction of the above-mentioned Project, and that (I) (we) have appointed_____, whose signature appears below, to supervise the payment of (my) (our) employees beginning_____, 20___; that he/she is in a position to have full knowledge of the facts set forth in the payroll documents and in the statement of compliance required by the Copeland Act and the City of Houston, which he/she is to execute with (my) (our) full authority and approval until such time as (I) (we) submit to the City of Houston a new certificate appointing some other person for the purposes hereinabove stated.

_____ Phone:_____
(Identifying Signature of Appointee)

Attest: _____
(Name of Firm or Corporation)

By:_____ By:_____
(Signature) (Signature)

_____ _____
(Title) (Title)

NOTE: This certificate must be executed by an authorized officer of a corporation or by a member of a partnership, and shall be executed prior to and be submitted with the first payroll. Should the appointee be changed, a new certificate must accompany the first payroll for which the new appointee executes a statement of compliance required by the Copeland Act and the City of Houston.

## EXHIBIT "C"

CERTIFICATE FROM SUBCONTRACTOR APPOINTING OFFICER OR EMPLOYEE TO SUPERVISE PAYMENT OF EMPLOYEES

Project Name _____

_____

Project WBS#:_____Date_____

(I) (We) hereby certify that (I am) (we are) the **Sub Contractor** for _____

_____
(specify type of job)

in connection with construction of the above-mentioned Project, and that (I) (we) have appointed_____, whose signature appears below, to supervise the payment of (my) (our) employees beginning_____, 20___; that he/she is in a position to have full knowledge of the facts set forth in the payroll documents and in the statement of compliance required by the Copeland Act and the City of Houston, which he/she is to execute with (my) (our) full authority and approval until such time as (I) (we) submit to the City of Houston a new certificate appointing some other person for the purposes hereinabove stated.

_____ Phone:_____
(Identifying Signature of Appointee)

Attest: _____
(Name of Firm or Corporation)

By:_____ By:_____
(Signature) (Signature)

_____ _____
(Title) (Title)

NOTE: This certificate must be executed by an authorized officer of a corporation or by a member of a partnership, and shall be executed prior to and be submitted with the first payroll. Should the appointee be changed, a new certificate must accompany the first payroll for which the new appointee executes a statement of compliance required by the Copeland Act and the City of Houston.

END OF DOCUMENT

**City of Houston**
**Pay or Play Program Requirements**

## I. Pay or Play Program Overview

### A. Purpose

The Pay or Play Program was established with Ordinance 2007-534 on July 1, 2007 and is governed by Executive Order 1-7. The Pay or Play Program (POP Program) creates a more level playing field and enhances fairness in the bid process between competing contractors that choose to offer health benefits to their workforce and those who do not. The program also recognizes and accounts for the fact that there are cost associated with health care of the uninsured citizens of the Houston and Harris County area.

### B. Program Elements

**1. <u>Covered contracts</u>:**

I.) Advertised after July 1, 2007 or which is executed on or after the effective date of this Executive Order.
II.) Contracts valued at or above $100,000.00 (contract) and $200,000.00 (sub-contract) including contingencies, amendments, supplemental terms and/or change orders.
III.) Professional Service, Construction, and Service type contracts.

**2. <u>Contracts not covered</u>:**

I.) Any contract in which the primary purpose is procurement of property, goods, supplies, and or equipment.
II.) An inter-governmental contract, inter-governmental agreement or purchasing cooperative.

**3. <u>Covered employees</u>:** This program applies to employees of a covered contractor or subcontractor, including contract labor, who are over age 18, work at least 30 hours per week <u>and</u> work any amount of time under a covered city contract or subcontract.

**4. <u>Pay or Play Option</u>:**

I.) "Pays" by contributing $1.00 per covered employee per regular hour for work performed under the contract with the City; or
II.) "Plays" by providing health benefits to covered employees. Health benefits must meet or exceed the following standards:

- The **employer will contribute no less than $150 per covered employee per month** toward the total premium cost.
- The **employee contribution, if any amount, will be no greater than 50% of the monthly premium cost and no more than $150 per month.**

***Note: (1)A contractor is deemed to have complied with section 5.4 of E.O. 1-7 with respect to a covered employee who is not provided health benefits if the employee refuses the benefits and the employee's contribution to the premium is no more than $40 per month. (2) If applicable the contractor has the option to both Pay and Play.***

5. **Exemptions/Waivers:** The City of Houston will award a contract to a contractor that neither Pays nor Plays only if the contractor has received an approved waiver (Form POP-4 requested by City departments only).

6. **Administration**: Contractor performance in meeting Pay or Play program requirements will be managed by the contracting department. The Office of Business Opportunity (OBO) has administrative oversight of the program, including audit responsibilities (department compliance). Questions about the program should be referred to the Department POP Liaison an updated contact list is available on http://www.houstontx.gov/obo/popforms.html or call Gracie Orr with the Office of Business Opportunity at 832-393-0633.

## II. Documentation and Reporting Requirements

### A. Document that must be signed and returned to administering department with the bid/proposal.

1.) City of Houston Pay or Play Program Acknowledgment Form (Form POP-1) acknowledges bidder/proposers' knowledge of the program and its requirements, and the intention to comply.

### B. Documents that must be signed and returned to administering department within a period designated by the department's Contract Administrator, upon notification of low bidder or successful proposer status:

1.) Certification of Compliance with Pay or Play Program (Form POP-2)

***Note - Contractors that opt to "play" must provide proof of coverage, including document from insurance provider, and names of covered employees.***

2.) List of Subcontractors (Form POP-3)

***Note- Review the affidavit statement at the bottom of this form for further important POP Compliance information.***

### C. Contractors reporting requirements:

1.) Contractors that opt to Pay
Provide monthly reports to administering department, detailing names of employees, hours worked, exemptions (if any) and amount owed. (Form POP-5)

2.) Contractors that opt to Play
Provide periodic reports to the contract administrator showing proof of coverage (insurance premium invoice or insurance card) reporting schedule will be determined by administering department based on length of contract. (Form POP-7)

3.) Employee Waiver Request
Contractor may request POP program waiver by submitting the request on POP-8 if the employee is less than 18 years old, employee has other health coverage such as through spouse or parents, or Medicare/Medicaid.

***Note proof of coverage must be provided in the form of a copy of the employee's insurance card. (Remove social security numbers if applicable)***

4.) Contractors shall submit an initial report with the second invoice to the department. Payments based on monthly reports are due to the contracting department with submission of the following month's invoice. Payments may be made out to the City of Houston preferably via cashier check or business check.

## III. Compliance and Enforcement

The Office of Business Opportunity will audit program compliance. Contractors willfully violating or misrepresenting POP program compliance will be subject to corrective and/or punitive action, including but not limited to the assessment of fines and penalties and/or debarment. The Pay or Play Program Requirements Form and all other POP Forms are available for downloading from the City of Houston's Website at http://www.houstontx.gov/obo/popforms.html

Document 00910

ADDENDUM NO.________________________

Date of Addendum: ____________________

****Enter date by hand when signed for release****

PROJECT NAME: Safe Sidewalk Program (Package III)

PROJECT NO: WBS No. N-320610-B125-4

BID DATE: November 6, 2014 (There is no change to the Bid Date.)

FROM: J. Timothy Lincoln, P.E., City Engineer
City of Houston, Department of Public Works and Engineering
611 Walker St.
Houston, Texas 77002
Attn: *Sam Kanu, P.E.*, Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

**************************************************************************

*Use the following heading and select the appropriate wording for postponement of the Bid Date. Delete the statement beside Bid Date above which indicates that the Bid Date is unchanged. If change in Bid Date, issue as separate addendum. Delete this section entirely if there is no change in Bid Date.*

**************************************************************************

CHANGE IN BID DATE

The Bid Date for this Project has been changed from ____________ (Date) to ____________ (Date).

[Time of day and place for submittal of bid remains the same]. [Time of submittal has been changed from ____________ (Time) to ____________ (Time). The place for submittal remains the same].

The bid date for this project has been indefinitely postponed.

**************************************************************************

*Delete the following paragraph if the sole purpose of the*

*Addendum is to postpone the Bid Date.*
**********

*This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars ( | ) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.*

**********
*Number each item of the Addendum beginning with 1 through the total number of change items in the Addendum. Sample entries are provided in brackets.*
**********

CHANGES TO PREVIOUS ADDENDA

**********
*Reference Addendum Number and item number to correct clarifications or make minor corrections of changes issued by previous Addenda.*
**********

ADDENDUM NO. _____
[1. Item 5. Change to read as follows:]

CHANGES TO PROJECT MANUAL

**********
*Follow this format to sequence changes to the Project Manual.*
**********

BIDDING REQUIREMENTS

**********
*Give the individual change instructions for each item of change by Document number and title. List changes in order of Document number.*
**********

[2. Document 00020 - Notice to Bidders. Replace page 00020-2.]
CONTRACT FORMS
[3. Document 00610 - Replace revised Performance Bond, page 00610-1.]
CONDITIONS OF THE CONTRACT
[4. Document 00800 - Supplementary Conditions. Replace page 00800-4 and add page 00800-5.]

SPECIFICATIONS

[5. Section 02050 - Demolition. Add section including pages 02050-1 through 02050-3.]

CHANGES TO DRAWINGS

[6. Delete Sheet S-9, Beam Schedule, and replace with Sheet S-9-A.]

CLARIFICATIONS

[7. Document 00210 - Supplementary Instructions to Bidders states that no substitutions will be considered during the bidding phase. Substitutions will be considered during the first 15 percent of the Contract Time or first 90 days of the Contract, whichever is less, as stated in Document 00700 - General Conditions.]

END OF ADDENDUM NO. _____

DATED: _____

*Ravi Kaleyatodi, P.E., CPM*
Senior Assistant Director
*Department of Public Works and Engineering*

RK:MS:SK:AS:sdd

END OF DOCUMENT

Document 00931

# REQUEST FOR INFORMATION

1. PROJECT No.: N-320610-B125-4
2. RFI No.: _____
3. PROJECT NAME: Safe Sidewalk Program (Package III)
4. CONTRACTOR: [Contractor Name]
5. CONTRACT No.: _____
6. SPECIFICATION Nos.: _____
7. DRAWING Nos.: _____
8. RESPONSE CODE: [_] CRITICAL [_] ROUTINE 9.DATE RESPONSE REQUIRED: _____
10. INFORMATION REQUIRED:

11. _____ _____
CONTRACTOR (Signature) TITLE DATE

12. RESPONSE:

13. _____ _____
PROJECT MANAGER (Signature) DATE

14. **If Contractor believes the response given in Item 12 requires an adjustment in Contract Price or Contract Time, Contractor shall submit a timely proposal so as not to delay Contractor's Work in accordance with General Conditions, Article 7 - Changes in the Work.**

END OF DOCUMENT

Section 01110

SUMMARY OF WORK

PART 1 G E N E R A L

1.01 SECTION INCLUDES

A. Summary of the Work including work by the City, City-furnished Products, work sequence, future work, Contractors use of Premises, Special conditions for substantial completion and City occupancy.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of the contract is for constructing new 4 ½-inch thick concrete sidewalks, saw- tooth curbs, curb and gutters, and wheel chair ramps as directed by the Engineer and according to the City of Houston Department of Public Works and Engineering Guidelines for the Safe Sidewalk Program dated October 20, 2009 or latest edition.

The work to be performed shall consist of furnishing and installing all materials, equipment, labor, excavation, backfill, grading, and seeding, or paving of disturbed areas, disposal of all debris and surplus excavation materials, and the demolition of existing facilities necessary to complete sidewalks, and wheel chair ramps as directed by the engineer.

B. Additional Work includes:
1. If necessary relocating signs and mail boxes.
2. Installing inlet protection barriers.
3. Removing and replacing retaining walls and headwalls.
4. Extending existing culverts and installing junction boxes as necessary.
5. Installing extended culverts as necessary.
6. Repaving existing driveways per City of Houston standard details for driveways.
7. Relocating water meters and fire hydrants outside of the sidewalk path as necessary.
8. Protecting and relocating sprinkler heads and all accessories.
9. Adjusting manhole frames and water valves to finished sidewalk grade.
10. Regrading and reconstructing ditches for positive drainage.
11. Slope pavements as necessary.
12. Block sodding or grass seeding and watering.
13. Asphalt milling and replacement for ramps at existing curbs.
14. Yard Drains. The Weston Group Consultants field survey may not identify existing yard drains in the area of proposed new sidewalks, but they could be hidden. The method of payment should use the extra unit price of item

No. 43: 3-inch PVC Yard Drain connected through the curb and all required fixtures.

15. Repainting existing crosswalk markings on pavement and painting new crosswalk markings as necessary.
16. Other related work identified on the drawings.
17. Unless noted otherwise, all the existing culverts under the existing driveways identified on the plans to be replaced shall be replaced with a minimum 24" RCP culvert per City of Houston standard requirements.

C. Implement and maintain temporary traffic control and storm water pollution prevention during construction.

D. Truncated domes will be incidental to new or replaced wheel chair ramps.

**E. The removal of fences, trees smaller than 8 inches in diameter, tree stumps, shrubs and bushes, and planters for the installation of sidewalk will be incidental and will not be paid as extra. However, relocating existing fence where identified on plans shall be paid for by linear feet**

**F. Tree protection, fencing, tree trunk protection, and the relocation of palm trees, shrubs and bushes for installation of sidewalk will be incidental and will not be paid as extra.**

G. Tree Preservation

Contractor shall adhere to the requirements of Document 01562 "Tree and Plant Protection" and Document 02915 "Tree Planting".

Contractor must refer to the Tree Preservation Plan provided in the set of construction drawings.

Contractor shall notify the City of Houston Parks and Recreation Department representative Mr. Victor Cordova, City Forester, at (832) 395-8454, at least two weeks in advance of clearing and cutting any tree.

H. The City of Houston policy states that the replacement of custom sidewalks and/or driveways shall be made with plain concrete.

I. The work sites are located in Council Districts D, I and E within the City of Houston City limits.

1.03 CASH ALLOWANCES – NONE

A. Include the following specific Cash Allowances in Contract Price under provisions of General Conditions Paragraph 3.11:

1. Street Cut Permit. The contractor will be required to apply and receive all required street cut permits from the City of Houston. The fees associated with these permits will be reimbursed to the contractor as a cash

2. Street Light – Contact Centerpoint Energy for removal and replacement of illumination poles. The contractor will be invoiced by Centerpoint Energy for the removal and replacement of Centerpoint Energy facilities. The fees associated with Centerpoint Energy's invoice will be reimbursed to the contractor as a cash allowance not to exceed: $10,000.00

1.04 CITY-FURNISHED PRODUCTS

B. Items Furnished by the City: NONE.

C. Contractor's Responsibilities:

1. Arrange and pay for Product delivery to the site.

2. Receive and unload Products at the site; jointly with the City, inspect for completeness or damage.

3. Handle, store, Install, and finish Products.

4. Repair or replace damaged items.

1.05 WORK SEQUENCE

A. No Phase for this project. During the construction period, coordinate construction schedule and operations with the City.

B. For project with no Phase, do not disturb more than 5 intersections, until site is restored in accordance with section 01740 – Site Restoration.

1. No more than two Consecutive intersections to be worked on at once.

2. No more than one lane, per intersection to be closed at once.

C. Coordination of the Work: Refer to Section 01312 – Coordination and Meetings.

1.06 CONTRACTOR RESPONSIBILITIES

1. The Contractor is required to become familiar with the areas of the proposed sidewalk construction by physically walking and observing the project site in order to inspect each proposed concrete sidewalk segment, prior to construction. It should be noted that limited topographic survey

was used in developing the base map for the proposed sidewalk, but both the City and the design engineer does not warranty its accuracy or completeness.

2. Contractor is required to stake out or layout the proposed sidewalk location for new sidewalks or the proposed replacement or existing sidewalks, prior to construction, for field verification and confirmation or the proposed horizontal alignment by COH PWE.

3. Contractor shall lawfully dispose of all demolished concrete, excavated material and other debris in construction areas immediately upon removal. No temporary storage of removed materials of construction will be permitted, including overnight storage of concrete dirt and sand at any location.

4. Contractor shall furnish and install all necessary signage, warning tape, barricades, lights etc. to protect the public from construction areas. Overnight excavation shall be properly barricaded using the above items.

5. On site supervision Foreman from the contractor's company must be present during all work. A subcontractor's Foreman representing the General Contractor will not satisfy this requirement.

6. Contractor shall maintain adequate pedestrian access at crosswalks and on adjoining sidewalks at all times.

7. Contractor shall be responsible for locating and protecting all utilities in the construction area. If any damage occurs to these utilities as the result of work, contractor shall make necessary repairs at no cost to the City.

8. Contractor shall be responsible for locating and protecting all underground irrigation systems. If any damage occurs to these systems as the result of work, contractor shall make the necessary repairs at no cost to the City or the property owner.

9. Contractor shall be responsible for restoring worksite to "as-found" or approved conditions. This may include solid sod, replacing shrubs, signs, mailboxes, any and all items in the construction area.

10. The Contractor shall, without additional expense to the City, be responsible for obtaining any necessary licenses and permits, and for complying with any federal, state and municipal laws, codes and regulations applicable to the performance of work.

11. Contractor shall be responsible for completing the work as set forth in the

drawings.

12. Contractor is responsible for protecting all existing driveway culverts in place unless noted on the drawings to be removed. Any damaged culverts by the Contractor shall be replaced with current City of Houston allowed culvert size and material within City's ROW at Contractor's sole expense.

13. It is the Contractor's responsibility to protect private properties within project vicinity and along Right-of Way line. Any private property damaged by the Contractor as a result of his activities shall be replaced to its original condition or better at no cost to the City of Houston or the private property owner.

14. Prior to commencement of work Contractor shall contact and notify the following institutions and or establishments at least 48 hours in advance of the proposed sidewalk construction:

    Coordinate with the Principals of the Schools located within the project limit before starting construction activities around the schools:

    HCFCD: 713-684-400

1.07 CONTRACTOR USE OF PREMISES

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

B. Construction Operations: Limited to City's rights-of-way provided by the City, and areas shown or described in the Contract documents.

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

D. The location of existing underground utilities are not guaranteed to be complete or definite, but were obtained from best information available. Contractor has sole responsibility for field verification for all existing facilities shown on drawings. **Contractor shall coordinate all conflicts with appropriate governing agencies. Contractor shall contact utility coordinating committee at (713) 223 – 4567 or 1-800-669-8344 a minimum of 48 hours prior to construction to field locate utilities.**

**to field locate utilities.**

E. Contractor must maintain street/lane and sidewalk closure permits as necessary.

1.07 STREET CUT ORDINANCES

A. Excavations on or under pavement in the City's right-of-way must have a permit. Comply with City of Houston, Texas Ordinance No. 2000-1115, an ordinance amending Chapter 40 of the Code of Ordinances, Houston, Texas, relating to excavating in the Public right-of-way.

B. Comply with the latest edition of street cut New Pavement Repair and Pavement Replacement details.

C. Quantities are included for street cut pavement repair and replacement in applicable Specification sections.

1.08 WARRANTY

A. Comply with warranty requirements in accordance with Document 00700 – General Conditions.

1.09 SPECIAL CONDITIONS FOR SUBSTANTIAL COMPLETION

A. In addition to requirements outlined in Document 00700 – General Conditions, for Contractor to be substantially complete with the Work and call for inspection by Project Manager to confirm, the following special conditions must be met or completed:

1. All pay items complete report.
2. Contractor shall contact Construction Project Manager to complete Texas Department of Licensing and Regulation Post Construction Inspection of pedestrian elements for Texas Accessibility Standards.
3. All safety related work including pavement striping, signing and signalization.

B. No special condition described in Paragraph 1.09 may be included in Contractor's punch list.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF DOCUMENT

Section 01255

# CHANGE ORDER PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedures for processing Change Orders, including:

1. Assignment of a responsible individual for approval and communication of changes in the Work;
2. Documentation of change in Contract Price and Contract Time;
3. Change procedures, using proposals and Modifications;
4. Execution of Change Orders;
5. Correlation of Contractor submittals.

### 1.02 REFERENCES

A. Blue Book is defined as the Rental Rate Blue Book for Construction Equipment (a.k.a. Data Quest Blue Book).

B. Rental Rate is defined as the full-unadjusted base rental rate for the appropriate item of construction equipment.

### 1.03 RESPONSIBLE INDIVIDUAL

A. Provide a letter indicating the name and address of the individual authorized to execute Modifications, and who will be responsible for informing others in Contractor's employ and Subcontractors of changes to the Work. Provide this information at the pre-construction meeting.

### 1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

A. Maintain detailed records of changes in the Work. Provide full information required for identification and evaluation of proposed changes, and substantiate costs of changes in the Work.

B. Document each proposal for change in Contract Price or Contract Time with sufficient data to allow evaluation of proposal.

C. Include the following minimum information on proposals:

1. Quantities of items in original Document 00410 – Bid Form with additions, reductions, deletions, and substitutions.

2. Quantities and cost of items in original Schedule of Values with additions, reductions, deletions and substitutions.

3. Provide Unit Prices for new items, with supporting information, for inclusion in Schedule of Unit Price Work.

4. Justification for changes in Contract Time.

5. Additional data upon request.

D. For changes in the Work performed on a time-and-material basis, provide the following additional information:

1. Quantities and description of Products.

2. Taxes, insurance and Bonds.

3. Overhead and profit as noted in Document 00700 - General Conditions.

4. Dates, times and by who work was performed.

5. Time records and certified copies of applicable payrolls.

6. Invoices and receipts for Products, rental equipment, and subcontracts, similarly documented.

E. For changes in the Work performed on a time-and-materials basis, rental equipment is paid as follows:

1. Actual invoice cost for duration of time required to complete extra work without markup for overhead and profit. When extra work comprises only a portion of a rental invoice where equipment would otherwise be on site, compute hourly equipment rate by dividing the actual monthly invoice by 176. One day equals eight hours and one week equals 40 hours.

2. Do not exceed estimated operating costs given in Blue Book for items of equipment. Overhead and profit will be allowed on the operating cost.

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

1. Contractor-owned equipment will be paid at the Blue Book Rental Rate for the duration of time required to complete extra work without markup for overhead and profit. Utilize lowest cost combination of hourly, daily, weekly or monthly rates. Use 150 percent of Rental Rate for double shifts, one extra shift per day, and 200 percent of Rental Rate for more than two shifts per day. Standby rates shall be 50 percent of the appropriate Rental Rate shown in Blue Book. No other rate adjustments apply.

2. Do not exceed estimated operating costs given in Blue Book. Overhead and profit will be allowed on operating costs. Operating costs will not be allowed for equipment on standby.

1.05 CHANGE PROCEDURES

A. Changes to Contract Price or Contract Time can only be made by issuance of Document 00941 - Change Order. Issuance of Document 00940 - Work Change Directive will be formalized into a Change Order. Changes will be in accordance with requirements of Document 00700 - General Conditions.

B. City Engineer will advise of Minor Changes in the Work as authorized by the Document 00700 - General Conditions by issuing Document 00942 – Minor Change.

C. Request clarification of Drawings, Specifications, Contract documents or other information by using Document 00931- Request for Information. Response by Project Manager to Requests for Information does not authorize Contractor to perform tasks outside scope of the Work. Changes must be authorized as described in this Section.

1.06 PROPOSALS AND CONTRACT MODIFICATIONS

A. Project Manager may issue Document 00932- Request for Proposal, which includes a detailed description of the proposed change with supplementary or revised Drawings and Specifications. Project Manager may also request a proposal in response to a Request for Information. Prepare and submit the proposal within seven days or as specified in request.

B. Submit requests for Contract changes to City Engineer describing proposed change and its full effect on the Work, with a statement describing reason for change and effect on Contract Price and Contract Time including full documentation.

C. Design Consultant may review Change Orders.

1.07 WORK CHANGE DIRECTIVE

A. City Engineer may issue a signed Work Change Directive instructing Contractor to proceed with a change in the Work. Work Change Directive will subsequently be incorporated into a Change Order.

B. Work Change Directives will describe changes in the Work and designate the method of determining change in Contract Price or Contract Time.

C. Proceed promptly to execute changes in the Work in accordance with the Work Change Directive.

1.08 STIPULATED PRICE CHANGE ORDER

A. A Stipulated Price Change Order will be based on an accepted proposal.

1.09 UNIT PRICE CHANGE ORDER

A. Where Unit Prices for affected items of the Work are included in Document 00410 – Bid Form, the Change Order will be based on Unit Prices, subject to Articles 7 and 9 of Document 00700 - General Conditions.

B. Where Unit Prices of the Work are not pre-determined in Document 00410-Bid Form, the Work Change Directive or accepted proposal will specify the Unit Prices to be used.

1.10 TIME-AND-MATERIAL CHANGE ORDER

A. Provide itemized account and supporting data after completion of change, within time limits indicated for claims in Document 00700 - General Conditions.

B. City Engineer will determine the change allowable in Contract Price and Contract Time as provided in Document 00700 - General Conditions.

C. Maintain detailed records for work done on time-and-material basis as specified in Paragraph 1.04 above.

D. Provide full information required for evaluation of changes and substantiate costs for changes in the Work.

1.11 EXECUTION OF CHANGE DOCUMENTATION

A. City Engineer will issue Change Orders, Work Change Directives, or Minor Change in the Work for signatures of Parties as described in Document 00700 - General Conditions.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

A. For Stipulated Price Contracts, promptly revise Schedule of Values and Application for Payment forms to record authorized Change Orders as separate line item.

B. For Unit Price Contracts, the next monthly estimate of the Work after acceptance of a Change Order will be revised to include new items not previously included with appropriate Unit Prices.

C. Promptly revise progress schedules to reflect change in Contract Time, and to adjust time for other items of work affected by the change, and resubmit for review.

D. Promptly enter changes to on-site and record copies of Drawings, Specifications or Contract documents as required in Section 01785 - Project Record Documents.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01270

# MEASUREMENT AND PAYMENT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedures for measurement and payment plus conditions for nonconformance assessment and nonpayment for rejected Products.

### 1.02 AUTHORITY

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

B. Project Manager will take all measurements and compute quantities accordingly.

C. Assist by providing necessary equipment, workers, and survey personnel.

D. Measurement and Payment paragraphs are included only in those Specification sections of Division 01 where direct payment will be made. Include costs in the total bid price for those Specification sections in Division 01 that do not contain Measurement and Payment paragraphs,

### 1.03 UNIT QUANTITIES SPECIFIED

A. Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by Project Manager will determine payment as stated in Article 9 of Document 00700 - General Conditions.

B. When actual work requires greater or lesser quantities than those quantities indicated in Document 00410 – Bid Form, provide required quantities at Unit Prices contracted, except as otherwise stated in Article 9 of Document 00700 - General Conditions.

### 1.04 MEASUREMENT OF QUANTITIES

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

B. Measurement by Volume:

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

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

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

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

E. Stipulated Price Measurement: By unit designated in the Agreement.

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

G. Measurement by Each: Measured by each instance or item provided.

H. Measurement by Lump Sum: Measure includes all associated work.

1.05 PAYMENT

A. Payment includes full compensation for all required supervision, labor, Products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or Installation of an item of the Work; and Contractor's overhead and profit.

B. Total compensation for required Unit Price work shall be included in Unit Price bid in Document 00410 – Bid Form. Claims for payment as Unit Price work, but not specifically covered in the list of Unit Prices contained in Document 00410 – Bid Form, will not be accepted.

C. Interim payments for stored materials will be made only for materials to be incorporated under items covered in Unit Prices, unless disallowed in Document 00800 - Supplementary Conditions.

D. Progress payments will be based on Project Manager's observations and evaluations of quantities incorporated in the Work multiplied by Unit Price.

E. Final payment for work governed by Unit Prices will be made on the basis of actual measurements and quantities determined by Project Manager multiplied by the Unit Price for work which is incorporated in or made necessary by the Work.

1.06 NONCONFORMANCE ASSESSMENT

A. Remove and replace work, or portions of the Work, not conforming to the Contract documents.

B. When not practical to remove and replace work, City Engineer will direct one of the following remedies:

1. Nonconforming work will remain as is, but Unit Price will be adjusted lower at discretion of City Engineer.

2. Nonconforming work will be modified as authorized by City Engineer, and the Unit Price will be adjusted lower at the discretion of City Engineer, when modified work is deemed less suitable than specified.

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

D. Authority of City Engineer to assess nonconforming work and identify payment adjustment is final.

1.07 NONPAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:

1. Products wasted or disposed of in an unacceptable manner.

2. Products determined as nonconforming before or after placement.

3. Products not completely unloaded from transporting vehicles.

4. Products placed beyond lines and levels of required work.

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

6. Loading, hauling, and disposing of rejected Products.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01292

# SCHEDULE OF VALUES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Preparation and submittal of Schedule of Values for Stipulated Price Contracts or for Major Unit Price Work on Unit Price Contracts.

### 1.02 PREPARATION

A. For Stipulated Price Contracts, subdivide the Schedule of Values into logical portions of the Work, such as major work items or work in contiguous construction areas. Use Section 01325 - Construction Schedule as a guide to subdivision of work items. Directly correlate Items in the Schedule of Values with tasks in the Construction Schedule. Organize each portion using the Project Manual Table of Contents as an outline for listing value of the Work by Sections. A pro rata share of mobilization, Bonds, and insurance may be listed as separate items for each portion of the Work.

B. For Unit Price Contracts, items should include a proportional share of Contractor's overhead and profit so that total of all items will equal Contract Price.

C. For lump sum equipment items, where submittal of operation and maintenance data and testing are required, include separate items for equipment operation and maintenance data where:

1. submittal of maintenance data is valued at five percent of the lump sum amount for each equipment item and

2. submittal for testing and adjusting is valued at five percent of the lump sum amount for each equipment item.

Round off figures for each item listed to the nearest $100. Set the value of one item, when necessary, to make total of all values equal the Contract Price for Stipulated Price Contracts or the lump sum amount for Unit Price Work.

1.03 SUBMITTAL

A. Submit the Schedule of Values, in accordance with requirements of Section 01330 - Submittal Procedures, at least 10 days prior to processing of the first Certificate for Payment.

B Submit the Schedule of Values in an approved electronic spreadsheet file and an 81/2-inch by 11-inch print on white bond paper.

C. Revise Schedule of Values for items affected by Contract Modifications. After City Engineer has reviewed changes, resubmit at least 10 days prior to the next scheduled Certificate for Payment date.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01312

# COORDINATION AND MEETINGS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. General coordination including pre-construction meeting, site mobilization conference, and progress meetings.

### 1.02 COORDINATION OF DOCUMENTS

A. Coordination is required throughout documents. Refer to Contract documents and coordinate as necessary.

### 1.03 CONTRACTOR COORDINATION

A. Coordinate scheduling, submittals, and work of various Specification sections to assure efficient and orderly sequence of Installation of interdependent construction elements.

B. Coordinate completion and clean up of the Work prior to the Date of Substantial Completion and for portions of the Work designated for City's partial occupancy.

C. Coordinate access to the site for correction of nonconforming work to minimize disruption of the City's activities where the City is in partial occupancy.

### 1.04 PRE-CONSTRUCTION MEETING

A. Project Manager will schedule pre-construction meeting.

B. Attendance Required: City representatives, Design Consultant, special consultants as required by Project Manager, Contractor, and major Subcontractors and Suppliers.

C. Agenda:

1. Distribution of Contract documents.

2. Designation of personnel representing the Parties and Design Consultant.

3. Review of insurance.

4. Discussion of formats for Schedule of Values and Construction Schedule.

5. Procedures and processing of Shop Drawings, substitutions, pay estimates or Applications for Payment, Requests for Information, Requests for Proposal, Modifications, and the Contract closeout, other submittals.

6. Scheduling of the Work and coordination with other contractors.

7. Review of Subcontractors and Suppliers.

8. Appropriate agenda items listed for the site mobilization conference, Paragraph 1.05.C, when pre-construction meeting and site mobilization conference are combined.

9. Procedures for testing.

10. Procedures for maintaining record documents.

1.05 SITE MOBILIZATION CONFERENCE

A. When required by Contract documents, Project Manager will schedule a conference at the Project site prior to Contractor mobilization.

B. Attendance Required: City representatives, Design Consultant, special consultants, Superintendent, and major Subcontractors.

C. Agenda:

1. Use of premises by the City and Contractor.

2. Safety and first aid procedures.

3. Construction controls provided by the City.

4. Temporary utilities.

5. Survey and layout.

6. Security and housekeeping procedures.

7. Field office requirements.

1.06 PROGRESS MEETINGS

A. Hold meetings at Project field office or other location designated by Project Manager. Hold meetings at monthly intervals, or more frequently when directed by Project Manager.

B. Attendance Required: Superintendent, major Subcontractors and Suppliers, City representatives, Design Consultant and its subconsultants as appropriate for agenda topics for each meeting.

C. Project Manager will make arrangements for meetings, and for recording minutes.

D. Project Manager will prepare the agenda and preside at meetings.

E. Provide required information and be prepared to discuss each agenda item.

F. Agenda:

1. Review minutes of previous meetings.

2. Review of construction schedule, pay estimates, cash flow curve, payroll and compliance submittals.

3. Field observations, problems, and necessary decisions.

4. Identification of problems that impede planned progress.

5. Review of submittal schedule and status of submittals.

6. Review of RFI and RFP status.

7. Modification status.

8. Review of off-site fabrication and delivery schedules.

9. Maintenance of Construction Schedule.

10. Corrective measures to regain Construction Schedule.

11. Planned progress during the succeeding work period.

12. Coordination of projected progress.

13. Maintenance of quality and work standards.

14. Effect of proposed Modifications on Construction Schedule and coordination.

15. Other item relating to the Work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01321

# CONSTRUCTION PHOTOGRAPHS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Photographic requirements for construction photographs and submittals.

### 1.02 DEFINITIONS

A. Pre-construction Photographs: Photographs taken, in sufficient numbers and detail, prior to Date of Commencement of the Work, to show original construction site conditions.

B. Progress Photographs: Photographs, taken throughout the duration of construction at regular intervals and from fixed vantage points, pre-approved by the City, that document progress of the Work.

C. Finished Photographs: Photographs, taken by a professional photographer near Date of Substantial Completion and before City Council's acceptance of the Work, that are suitable for framing and for use in brochures or on the Internet

### 1.03 SUBMITTALS

A. Refer to Section 01330, Submittal Procedures, for submittal requirements.

B. Format and Media. Film or digital photography may be used. Submit color photographs, unless otherwise specified.

1. Prints. Submit each Progress or Pre-construction Photograph print in a three-hole plastic pocket or sleeve, bound in a three-ring notebook. Produce prints on photographic-quality paper approved by Project Manager. Minimum size for Pre-construction Photograph prints shall be 3-inches by 5-inches. Progress Photograph prints shall be 8-inches by 10-inches.

2. Film. Use 35mm or larger color film. Submit negatives used to make submitted photographs, in 3-hole 8-1/2 inch by 11-inch plastic sheets with sleeves for negatives.

3. Digital Photography. Use 2.1 megapixel density or greater for photographs. Scanned photographs must equal or exceed 400 dots

per inch when scanned from 8-inch by 10-inch prints. Submit digital photographic files on computer disks. Format disks for MS-DOS (Microsoft Disk Operating System) filing system and in JPEG (Joint Photographic Experts Group) format.

C. Submittal Quantities and Frequencies.

1. Pre-construction Photographs:
   a. For Stipulated Price Contracts, submit two sets of Pre-construction Photographs, if required, prior to first Application for Payment.
   b. For Unit Price Contracts, submit two sets of Pre-construction Photographs prior to start of construction operations.

2. Progress Photographs:
   a. For Stipulated Price Contracts, submit three sets of Progress Photographs with each Application for Payment at the times established for submittal of Applications for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs.
   b. Progress Photographs are not required for Unit Price Contracts unless otherwise specified.

3. Finished Photographs: For Stipulated Price Contracts submit two sets of Finished Photographs, if required, after Date of Substantial Completion and prior to final payment. Each set shall contain one 11-inch by 14-inch matte finish color photographic print from each of the two vantage points pre-approved by the City. Vantage points for Finished Photographs will be approved separately from vantage points approved for Progress Photographs. Finished Photographs are not required for Unit Price Contracts unless otherwise specified.

D. Labeling. Place a label on the back of each photographic print, applied so as to not to show through on the front. Labels shall contain the following information:

1. Name of Project, address of Project and GFS Number.

2. Name and address of Contractor.

3. Date photograph was taken.

4. Location photo was taken from and short description of photo subject.

5. Name and address of professional photographer who took the photograph, if applicable.

E. Hand-deliver or transmit prints in standard photographic mailers marked "Photographs - Do Not Bend".

F. Photographic prints, negatives, photographic files and disks become the property of the City. Do not be publish photographs without written consent by the City.

1.04 QUALITY ASSURANCE

A. Contractor shall be responsible for the quality of and timely execution and submittal of photographs.

B. For Finished Photographs, Contractor shall use a professional photographer, with five years minimum professional experience in the Houston area. Contractor shall submit name, address and credentials of professional photographer for Project Manager's review and approval.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION PHOTOGRAPHS

A. Prior to commencement of construction operations, photograph the site to include initial construction corridor, detour routes, and staging or storage areas.

1. For Stipulated Price Contracts, unless specified as a requirement in other Sections, these photographs are optional for Contractor, but are highly recommended for areas bounded by other property owners.

2. Pre-construction photographs are required for Unit Price Contracts. For line projects with scheduled construction segments, take Pre-construction Photographs prior to commencement of work on each segment.

B. Prepare Pre-construction Photographs as follows:

1. Show the following information on a non-reflective chalkboard placed within the picture frame:
   a. Job number.
   b. Project Number.
   c. Date and time photographs were taken (Automatic date/time in negative is acceptable).
   d. Baseline station, direction of view (i.e. N, S, NW, etc.) and house number or street address and street name.

2. Pre-construction Photographs shall indicate condition of the following:
   a. Esplanades and boulevards.
   b. Yards (near side and far side of street).
   c. House walks and sidewalks.
   d. Curbs.
   e. Areas between walks and curbs.
   f. Particular features (e.g. yard lights, shrubs, fences, trees).

3. Show date photographs were taken on negatives.

C. Show the location of vantage points and direction of shots on a key plan of the site.

3.02 PROGRESS PHOTOGRAPHS

A. Progress Photographs document monthly advancement of the Work. Select vantage points for each shot so as to best show status of construction and progress since last photograph submittal. Select camera stations that will require little or no movement or adjustment over the duration of construction.

B. Take monthly Progress Photographs at regular intervals to coincide with cutoff dates associated with each Application for Payment.

3.03 FINISHED PHOTOGRAPHS

A. Finished Photographs shall be "staged" and taken by a professional photographer to depict the most flattering images of a finished facility. Two vantage points, from which Finished Photographs will be taken, shall be agreed to in advance by the City. Photographer shall consider lighting, time of day, height of eye, landscaping and placement of vehicles, people and other props in each picture. Filters and post-photography processing may be utilized to achieve a finished product acceptable to the City.

3.04 LOCATION

A. Vantage points, times and conditions for camera stations and photography for Progress and Finished Photographs shall be mutually agreed upon by the City, Contractor and Photographer. Progress Photograph vantage points may be changed by mutual agreement as the Work progresses, at no additional cost to the City.

END OF SECTION

Section 01325

# CONSTRUCTION SCHEDULE

## PART 1 GENERAL

### 1.01 GENERAL

A. Provide Construction Schedules for the Work included in this Contract in accordance with requirements in this Section. Create Construction Schedule using Critical Path Method (CPM) computer software capable of mathematical analysis of Precedence Diagramming Method (PDM) plan. Provide printed activity listings and bar charts in formats described in this Section.

B. Combine activity listings and bar charts with narrative report to form Construction Schedule submittal for Project Manager.

### 1.02 SCHEDULING STAFF

A. Employ or retain services of individual experienced in CPM scheduling for duration of the Contract. Individual shall cooperate with Project Manager and update schedule monthly as required to indicate current status of the Work.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. During preconstruction meeting, as described in Section 01312 - Coordination and Meetings, provide sample bar charts and activity listings produced from scheduling software proposed. Scheduling software is subject to review by Project Manager and must meet requirements provided in this Section. Project Manager will provide review of samples within seven days of submittal.

C. Within 21 days of receipt of approval of Contractor's format, or 30 days of Notice to Proceed, whichever is later, submit proposed Construction Schedule for review. Base Construction Schedule submittal on the following:

1. Level of detail and number of activities required in schedule are dependent on project type.
   a. For wastewater projects, categorize work type and area code in schedule.
      1) For wastewater rehabilitation projects, there are six work-type categories. An area code will be assigned for each

Meter Service Area or Basin. Include at least one activity for each unique combination of work type and area code. Normal schedules of wastewater rehabilitation projects contain between 35 and 100 activities, depending on number of basins and work types involved in each basin.

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

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

b. For projects with multiple types of tasks within scope, indicate types of work separately within schedule.

c. For projects with work at different physical locations or service areas, or different facilities within a site, indicate each location or facility separately within schedule. Show work on each floor of multi-story building as separate tasks.

d. For projects with multiple crafts or significant Subcontractor components, indicate elements separately within schedule. Unless permitted by Project Manager, tasks shall consist of work covered by only one division of Project Manual.

2. Unless permitted by Project Manager, each scheduled task shall be same as Schedule of Values line item, and vice versa.

3. For projects with Major Unit Price Work, indicate Shop Drawing submittal and review, purchase, delivery, and Installation dates on Project schedule. Include activities for testing, adjustment, and delivering O&M manuals.

4. No task except the acquisition of Major Unit Price Work shall represent more than one percent of Original Contract Price for facility projects and three percent of Original Contract Price for other projects. Duration of tasks may not exceed 40 calendar days.

5. For projects where operating facilities are involved, identify each period of work that will impact any process or operation in the schedule and that must be agreed to by Project Manager and facility operator prior to starting work in the area.

D. Construction Schedule submittals shall include:

1. printed bar charts that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software;

2. activity listings that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software; and

3. a predecessor/successor listing sorted by Activity ID that meets criteria outlined in this Section and is produced by Contractor's scheduling software.

4. A logic network diagram is required with the first Construction Schedule submittal for facilities projects.

5. Prepare and submit graphic or tabular display of estimated monthly billings (i.e. a cash flow curve for the Work) with the first schedule submittal. This information is not required in monthly updates, unless significant changes in work require re-submittal of schedule for review. Display shall allocate units indicated in bid schedule or Schedule of Values to Construction Schedule activities. Weighted allocations are acceptable, where appropriate. Dollar value associated with each allocated unit will be spread across the duration of that activity on a monthly basis. Total for each month and cumulative total will be indicated. These monthly forecasts are only for Project Manager's planning purposes. Monthly payments for actual work completed will be made in accordance with Document 00700 - General Conditions.

6. Narrative Report that provides the information outlined in this Section.

E. No payment will be made until Project Manager approves Construction Schedule and billing forecast.

F. If Contractor desires to make changes in its method of operating and scheduling, after Project Manager has reviewed original schedule, notify Project Manager in writing, stating reasons for changes. When Project Manager considers these changes to be significant, Contractor may be required to revise and resubmit for review all or affected portion of Contractor's Construction Schedule to show effect on the Work.

G. Upon written request from Project Manager, revise and submit for review all or any part of Construction Schedule submittal to reflect changed conditions in the Work or deviations made from original schedule.

H. Updated Construction Schedule with actual start and actual finish dates, percent complete, and remaining duration of each activity shall be submitted monthly. Data date used in updating monthly Construction Schedule shall be the same date as used in monthly Payment Application. Monthly update of Construction Schedule is required for monthly Payment Application to be processed for payment.

1.04 SCHEDULING COMPUTER SOFTWARE REQUIREMENTS

A. Contractor's scheduling software shall be capable of creating bar charts and activity listings, which can be sorted by various fields (i.e. Activity ID, Early Start, Total Float, Area Code, Specification Section number, and Subcontractor). Use software capable of producing logic network diagram.

B. Use scheduling software capable of producing activity listings and bar charts with the following information for each activity in the schedule:

1. Activity ID
2. Activity Description
3. Estimated (Original) Duration
4. Remaining Duration
5. Actual Duration
6. Early Start Date
7. Late Start Date
8. Early Finish Date
9. Late Finish Date
10. Free Float
11. Total Float
12. Activity Codes (such as Area Code, Work Type, Specification Section, Subcontractor)

C. Use scheduling software capable of printing calendars using mathematical analysis of schedule, indicating standard workdays of week and scheduled holidays.

D. Use scheduling software capable of printing activity listing that indicates predecessors and successors, lag factors and lag relationships used in creating logic of the schedule.

E. Use scheduling software to provide monthly time in Bar Chart format and scale with 12-month scale not to exceed one page width. Bar charts may be

printed or plotted on 8-1/2 by 11-inch, 8-1/2 by 14-inch or 11 by 17-inch sheet sizes. Over-size plots are not acceptable.

1.05 NARRATIVE SCHEDULE REPORT

A. Narrative schedule report shall list activities started this month, activities completed this month, activities continued this month, activities scheduled to start or complete next month, problems encountered this month, and actions taken to solve these problems.

B. Narrative schedule report shall describe changes made to Construction Schedule logic (i.e. changes in predecessors and lags), activities added to schedule, activities deleted from schedule, any other changes made to the schedule other than addition of actual start dates and actual finish dates and changes of data date and remaining durations for re-calculation of mathematical analysis.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01326

# CONSTRUCTION SCHEDULE (BAR CHART)

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Provide an initial Construction Schedule as required by this section for the Work. Do not start construction until Project Manager reviews the schedule.

### 1.02 FORM AND CONTENT OF INITIAL CONSTRUCTION SCHEDULE

A. Bar Chart:

1. Show major construction activities such as pipe laying, by traffic control phases or other approved key areas; tunnel construction, pavement removal, pavement replacement, pressure testing, chlorination, clean up and punch list as separate activities on the schedule.

2. Show week duration for each activity.

3. Show separate activities for each Shop Drawing and Product Data submittal critical to timely completion. Show submittal dates and dates Project Manager needs to provide approved submittals.

4. Provide separate horizontal bar for each activity. List start and finish date for each activity at left side of diagram.

5. Horizontal Time Scale: Identify first work day of each week.

6. Scale and Spacing: Notes must be legible. Allow space for notations and future revisions.

7. Order of Listings: Order bar chart listings by phases or other approved groups of activities that are contiguous. List activities in chronological order within each phase or group.

B. Narrative Description:

1. Submit narrative descriptions of anticipated work sequences as indicated by the sequence of activities presented in the schedule.

2. Discuss any activity that affects the public (such as phases of traffic control), interaction with specific forces of the City (such as valve operation, chlorination and testing) or other associated contractors.

1.03 PROGRESS REVISIONS

A. Submit progress revisions or necessary information to complete and process Payment Applications. When required, re-submittals for rejected revisions must be submitted and reviewed prior to the following month's processing of a Payment Application. The following month's Payment Application will not be processed until the re-submittal is reviewed and required progress revisions are received.

B. Provide a narrative report to describe:

1. Major changes in scope.

2. Revised projections in progress, completion, or changes in activity duration.

3. Other identifiable changes.

4. Problem areas, anticipated delays, and the impact on schedule.

5. Corrective action recommended and its effect.

6. Effect of changes on schedules or other contractors.

7. Product delivery lead times.

C. Include additional data with Bar Chart described in Paragraph 1.03A of this Section:

1. Show original dates for each activity in the approved initial progress schedule by narrow bar next to a wider bar for the current schedule.

2. Show date each activity actually started or finished when an event has occurred. Clearly identify actual dates in two right-most columns in left portion of an 11 by 17-inch chart.

3. Indicate the percentage progress to the date of submittal for each activity.

1.04 SUBMITTALS

A. Submit the initial progress schedule within 15 days after award of contract. Project Manager will review the schedule and return a reviewed copy within 21 days after receipt.

B. Cut-off dates for progress revisions may be as early as the 20th of the month to avoid delaying processing of Payment Applications. Use the cut-off date for the first approved revision for further revisions.

C. When required, re-submit within seven days after return of review copy.

D. Include connecting lines between bars in the schedule to indicate the sequence that activities will be accomplished. Connecting lines when the activity's start or finish is modified will identify impact of preceding or succeeding activities. Submit a minimum of six copies of the bar chart on 11 by 17-inch opaque reproductions. Project Manager will retain five copies and return the remaining copy.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01330

# SUBMITTAL PROCEDURES

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Submittal procedures for:

1. Schedule of Values
2. Construction Schedules and Cash Flow Curve (billing forecast).
3. Shop Drawings, Product Data and Samples
4. Operations and Maintenance (O&M) Data
5. Manufacturer's Certificates
6. Construction Photographs
7. Project Record Documents and monthly certification.
8. Video Tapes
9. Design Mixes

### 1.02 SUBMITTAL PROCEDURES

A. Scheduling and Handling:

1. Submit Shop Drawings, data and Samples for related components as required by Specifications and Project Manager.
2. Schedule submittals well in advance of need for construction Products. Allow time for delivery of Products after submittal approval.
3. Develop submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. Allow a minimum of 30 days for initial review. Project Manager will review and return submittals to Contractor as expeditiously as possible but time required for review will vary depending on complexity and quantity of data submitted.

4. Project Manager's review of submittals covers only general conformity to Drawings, Specifications and dimensions that affect layout. Contractor is responsible for quantity determination. No quantities will be verified by Project Manager. Contractor is responsible for errors, omissions or deviations from Contract requirements; review of submittals does not relieve Contractor from the obligation to furnish required items in accordance with Drawings and Specifications.

5. Submit five copies of documents unless otherwise specified.

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

7. Assume risk for fabricated Products delivered prior to approval. Do not incorporate Products into the Work, or include payment for Products in periodic progress payments, until approved by Project Manager.

B. Transmittal Form and Numbering:

1. Transmit each submittal to Project Manager with Transmittal letter which includes:
   a. Date and submittal number
   b. Project title and number
   c. Names of Contractor, Subcontractor, Supplier and manufacturer
   d. Identification of Product being supplied
   e. Location of where Product is to be Installed
   f. Applicable Specification section number

2. Identify deviations from Contract documents clouding submittal drawings. Itemize and detail on separate 8-1/2 by 11-inch sheets entitled "DEVIATIONS FOR _____." When no deviations exist, submit a sheet stating no deviations exist.

3. Have design deviations signed and sealed by an appropriate design professional, registered in the State of Texas.

4. Sequentially number transmittal letters beginning with number one. Use original number for resubmittals with an alphabetic suffix (i.e., 2A for the first resubmittal of submittal 2, or 15C for third resubmittal of submittal 15, etc.). Show only one type of work or Product on each submittal. Mixed submittals will not be accepted.

C. Contractor's Stamp:

1. Apply Contractor's Stamp certifying that the items have been reviewed in detail by Contractor and that they comply with Contract requirements, except as noted by requested variances.

2. As a minimum, Contractor's Stamp shall include:
   a. Contractor's name
   b. Job number
   c. Submittal number
   d. Certification statement Contractor has reviewed submittal and it is in compliance with the Contract
   e. Signature line for Contractor

D. Submittals will be returned with one of the following Responses:

1. "ACKNOWLEDGE RECEIPT" when no response and resubmittal is required.

2. "NO EXCEPTION" when sufficient information has supplied to determine that item described is accepted and that no resubmittal is required.

3. "EXCEPTIONS AS NOTED" when sufficient information has been supplied to determine that item will be acceptable subject to changes, or exceptions, which will be clearly stated. When exceptions require additional changes, the changes must be submitted for approval. Resubmittal is not required when exceptions require no further changes.

4. "REJECTED-RESUBMIT" when submittal does not contain sufficient information, or when information provided does not meet Contract requirements. Additional data or details requested by Project Manager must be submitted to obtain approval.

1.03 MANUFACTURER'S CERTIFICATES

A. When required by Specification sections, submit manufacturers' certificate of compliance for review by Project Manager.

B. Place Contractor's Stamp on front of certification.

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

D. Product certificates may be recent or from previous test results, but must be acceptable to Project Manager.

1.04 DESIGN MIXES

A. When required by Specification sections, submit design mixes for review.

B. Place Contractor's Stamp, as specified in this section, on the front of each design mix.

C. Mark each mix to identify proportions, gradations, and additives for each class and type of mix submitted. Include applicable test results from samples for each mix. Perform tests and certifications within 12 months of the date of the submittal.

D. Maintain copies of approved mixes at mixing plant.

1.05 CHANGES TO CONTRACT

A. Changes to Contract may be initiated by completing a Request for Information form. Project Manager will provide a response to Contractor by completing the form and returning it to Contractor.

1. If Contractor agrees that the response will result in no increase in cost or time, a Minor Change in the Work will be issued by City Engineer.

2. If Contractor and Project Manager agree that an increase in time or cost is warranted, Project Manager will forward the Request for Proposal for negotiation of a Change Order.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01340

# SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Methods, schedules, and processes to be followed for Shop Drawings, Product Data and Sample submittals.

### 1.02 REQUIREMENT

A. Submit Shop Drawings, Product Data and Samples as required by Document 00700 - General Conditions and Specification sections, using procedures specified in Section 01330 - Submittal Procedures and the requirements of this Section.

B. Shop Drawings, Product Data and Samples are not considered Contract documents.

### 1.03 SHOP DRAWING/SUBMITTAL SCHEDULE

A. Submit a separate Shop Drawing submittal schedule at same time the Construction Schedule is submitted. List Products for which Shop Drawings and other submittals are required in the order that they appear in Specifications. Include Product Data and Sample submittals in the schedule. Payment Applications or Certificates for Payment will not be processed until Project Manager has approved the Shop Drawing submittal schedule.

### 1.04 SHOP DRAWINGS

A. Submit a minimum of seven sets of Shop Drawings and Product Data in a form and quality suitable for microfilming. Review and sign Shop Drawings indicating compliance with the Contract.

B. Place Contractor's Stamp on each drawing as described in Section 01330 - Submittal Procedures.

C. Show the following accurately and distinctly:

1. Field and erection dimensions;

2. Arrangement and section views;

3. Relation to adjacent materials or structure, including complete information for making connections between the Work and work under other contracts;

4. Types of Products and finishes;

5. Parts list and descriptions;

6. Assembly drawings of equipment components and accessories showing respective positions and relationships to the complete equipment package;

7. Identify details by referencing drawing sheet and detail numbers, schedule or room numbers as shown on the Contract drawings, where necessary for clarity.

D. Scale drawings to provide a true representation of the specific equipment or item Furnished.

E. Coordinate and submit components, necessary for Project Manager to adequately review submittal, as a complete package. Reproduction of the Drawings for use in Shop Drawings is not allowed.

F. For major changes to original documents, submit Computer-Aided Design (CAD) drawings on a media acceptable to Project Manager.

1.05 PRODUCT DATA

A. Submit Product Data for review as required in Specifications.

B. Place Contractor's stamp, on each data item submitted, as described in Section 01330 - Submittal Procedures.

C. Mark each copy to identify applicable Products, models, and options to be used in the Work. Where required by Specifications, supplement manufacturers' standard data to provide information unique to the Work.

D. Give manufacturers, trade name, model or catalog designation and applicable reference standard for Products specified only by reference standards.

E. Pre-approved and Pre-qualified Products.

1. For "pre-approved", "pre-qualified" and "approved" Products named in the City standard products list, provide an appropriate list designation,

as described in Section 01630 - Product Substitution Procedures, within 30 days after Notice to Proceed.

2. For Products proposed as alternates to "approved" products, provide information required to demonstrate that the proposed Products meet the level of quality and performance criteria of the "approved" product.

1.06 SAMPLES

A. Submit Samples for review as required by Specifications. Have Samples reviewed and signed by a Registered Professional.

B. Place Contractor's stamp on each Sample or firmly attach a sheet of paper with Contractor's stamp, as described in Section 01330 - Submittal Procedures.

C. Submit the number of Samples specified in Specifications; Project Manager will retain one.

D. Reviewed Samples that may be used in the Work are identified in Specifications.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01410

# TPDES REQUIREMENTS

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Documentation to be prepared and signed by Contractor before conducting construction operations, in accordance with the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit Number TXR 150000 issued March 5, 2003 (the Construction General Permit).

B. Implementation, maintenance inspection, and termination of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, off-site vehicle tracking, and other appropriate practices shown on the Drawings or specified elsewhere in the Contract.

C. Review of the Storm Water Pollution Prevention Plan (SWP3) implementation in a meeting with Project Manager prior to start of construction.

### 1.02 DEFINITIONS

A. Commencement of Construction Activities: The exposure of soil resulting from activities such as clearing, grading, and excavating.

B. Large Construction Activity: Project that:

1. disturbs five acres or more, or

2. disturbs less than five acres but is part of a larger common plan of development that will disturb five acres or more of land.

C. Small Construction Activity: Project that:

1. disturbs one or more acres but less than five acres, or

2. disturbs less than one acre but is part of a larger common plan of development that will ultimately disturb one or more acres but less than five acres.

D. TPDES Operator:

1. The person or persons who have day-to-day operational control of the construction activities which are necessary to ensure compliance with the SWP3 for the site or other Construction General Permit conditions.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N

3.01 SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWP3)

A. Prepare a SWP3 following Part III of the Construction General Permit and the Storm Water Management Handbook for Construction Activities issued under City Ordinance Section 47-695(b). If conflicts exist between the Construction General Permit and the handbook, the more stringent requirements will apply.

B. Update or revise the SWP3 as needed during the construction following Part III, Section E of the Construction General Permit.

C. Submit the SWP3 and any updates or revisions to Project Manager for review and address comments prior to commencing, or continuing, construction activities.

3.02 NOTICE OF INTENT For Large Construction Activity

A. Fill out, sign, and date TCEQ Form 20022 (02/03) Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR 150000), **ATTACHMENT 1** of this Section 01410.

B. Transmit the signed Contractor's copy of TCEQ Form 20022 (02/03), along with a $100.00 check, made out to Texas Commission on Environmental Quality, and the completed Payment Submittal Form to Project Manager.

C. Project Manager will complete a separate TCEQ Form 20022 (02/03) for City's Notice of Intent, and will submit both Notices, along with checks for application fees, to the TCEQ.

D. Submission of the Notice of Intent form by both the City and Contractor to TCEQ is required a minimum of two days before Commencement of Construction Activities.

3.03 CONSTRUCTION SITE NOTICE FOR SMALL CONSTRUCTION ACTIVITY

A. Fill out, sign, and date the Construction Site Notice, Attachment 2 to TPDES General Permit TXR 150000, "Construction Site Notice", **ATTACHMENT 2** of this Section 01410.

B. Transmit the signed Construction Site Notice to Project Manager at least seven days prior to Commencement of Construction Activity.

3.04 CERTIFICATION REQUIREMENTS

A. Fill out TPDES Operator's Information form, **ATTACHMENT 3** of this Section 01410, including Contractor's name, address, and telephone number, and the names of persons or firms responsible for maintenance and inspection of erosion and sediment control measures. Use multiple copies as required to document full information.

B. Contractor and Subcontractors shall sign and date the Contractor's / Subcontractor's Certification for TPDES Permitting, **ATTACHMENT 4** of this Section 01410. Include this certification with other Project certification forms.

C. Submit properly completed certification forms to Project Manager for review before beginning construction operations.

D. Conduct inspections in accordance with TCEQ requirements. Ensure persons or firms responsible for maintenance and inspection of erosion and sediment control measures read, fill out, sign, and date the Erosion Control Contractor's Certification for Inspection and Maintenance. Use the EPA NPDES Construction Inspection Form, **ATTACHMENT 5** of this Section 01410; and the City of Houston Storm Water Pollution Prevention Plan Construction Site Inspection Report, **ATTACHMENT 6** of this Section 01410 to record maintenance inspections and repairs.

3.05 RETENTION OF RECORDS

A. Keep a copy of this document and the SWP3 in a readily accessible location at the construction site from Commencement of Construction Activity until submission of the Notice of Termination (NOT) for Storm Water Discharges Associated with Construction Activity under TPDES Construction General Permit (TXR 150000). Contractors with day-to-day operational control over SWP3 implementation shall have a copy of the SWP3 available at a central location, on-site, for the use of all operators and those identified as having responsibilities under the SWP3. Upon submission of the NOT, submit all required forms and a copy of the SWP3 with all revisions to Project Manager.

3.06 REQUIRED NOTICES

A. Post the following notices from effective date of the SWP3 until date of final site stabilization as defined in the Construction General Permit:

1. Post the TPDES permit number for Large Construction Activity, or a signed TCEQ Construction Site Notice for Small Construction Activity. Signed copies of the City's and Contractor's NOI must also be posted.

2. Post notices near the main entrance of the construction site in a prominent place for public viewing. Post name and telephone number of Contractor's local contact person, brief project description and location of the SWP3.
   a. If posting near a main entrance is not feasible due to safety concerns, coordinate posting of notice with Project Manager to conform to requirements of the Construction General Permit.
   b. If Project is a linear construction project (e.g.: road, utilities, etc.), post notice in a publicly accessible location near active construction. Move notice as necessary.

3. Post a notice to equipment and vehicles operators, instructing them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post at each stabilized construction exit area.

4. Post a notice of waste disposal procedures in a readily visible location on site.

3.07 ON-SITE WASTE MATERIAL STORAGE

A. On-site waste material storage shall be self-contained and shall satisfy appropriate local, state, and federal rules and regulations.

B. Prepare list of waste material to be stored on-site. Update list as necessary to include up-to-date information. Keep a copy of updated list with the SWP3.

C. Prepare description of controls to reduce pollutants generated from on-site storage. Include storage practices necessary to minimize exposure of materials to storm water, and spill prevention and response measures consistent with best management practices. Keep a copy of the description with the SWP3.

3.08 NOTICE OF TERMINATION

A. Submit a NOT, **ATTACHMENT 7** of this Section 01410, to Project Manager within 30 days after:

1. Final stabilization has been achieved on all portions of the site that are the responsibility of the Contractor; or

2. Another operator has assumed control over all areas of the site that have not been stabilized; and

3. All silt fences and other temporary erosion controls have either been removed, scheduled to be removed as defined in the SWP3, or transferred to a new operator if the new operator has sought permit coverage.

B. Project Manager will complete City's NOT and submit Contractor and City's notices to the TCEQ and MS4 entities.

END OF SECTION

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# ATTACHMENT 1

**Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR150000)**

For help completing this application, read the TXR150000 NOI Instructions (TCEQ-20022-Instructions).

**TCEQ Office Use Only**
TPDES Permit Number: TXR15|__|__|__|__| - NO
GIN Number: |__|__|__|__|__|__|__|__|

**A. Construction Site Operator** ☐New ☐No Change Customer Reference Number: CN_____
Name:_____
Mailing Address:_____ City:_____ State:____ Zip Code:_____
Country Mailing Information (*if outside USA*) Territory:_____ Country Code:_____ Postal Code:_____
Phone Number:_____ Extension:_____ Fax Number:_____
E-mail Address:_____
Type of Operator: ☐ Individual ☐ Sole Proprietorship - D.B.A. ☐ Partnership ☐ Corporation ☐ Federal Government
☐ State Government ☐ County Government ☐ City Government ☐ Other:_____
Independent Operator? ☐ Yes ☐ No Number of Employees: ☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 or higher
Federal Tax ID:_____ State Franchise Tax ID Number:_____ DUNS Number:_____

**B. Billing Address**
Name:_____
Mailing Address:_____ City:_____ State:____ Zip Code:_____
Country Mailing Information (*if outside USA*) Territory:_____ Country Code:_____ Postal Code:_____

**C. Project / Site Information** ☐New ☐No Change Regulated Entity Reference Number: RN_____
Name:_____
Mailing Address:_____ City:_____ State:____ Zip Code:_____
Physical Address:_____ City:_____ County:_____ Zip Code:_____
Location Access Description:_____
Latitude:___°___'___" N Longitude:___°___'___" W Degrees (°), Minutes ('), and Seconds (")
Latitude:_____ Longitude: -_____ Decimal Form
Standard Industrial Classification (SIC) code:_____ Also, describe the construction activity at this site *(do not repeat the SIC code)*:
_____
Has a storm water pollution prevention plan been prepared as specified in the general permit (TXR150000)? ☐ Yes ☐ No
Estimated area of land disturbed (to the nearest acre):_____ Is the project / site located on Indian Country Lands? ☐ Yes ☐ No
Does this project / site discharge storm water into a municipal separate storm sewer system (MS4)? ☐ Yes ☐ No
If yes, provide the name of the MS4 operator:_____
Provide the name or segment number of the water body that receives storm water from this project / site:_____

**D. Contact** - If the TCEQ needs additional information regarding this application, who should be contacted?
Name:_____ Title:_____
Phone Number:_____ Extension:_____ Fax Number:_____
E-mail Address:_____

**E. Payment Information** - Check / Money Order Number:_____ Name on Check / Money Order:_____

**F. Certification**
I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Construction Site Operator:**
Prefix:_____ First:_____ Middle:_____
Last:_____ Suffix:_____ Title:_____
Signature:_____ Date:_____

If you have questions on how to fill out this form or about the storm water program, please contact us at (512) 239-4671.
Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at (512) 239-3282.

The completed NOI must be mailed to the following address. Use the attached document to submit the $100 application fee. Please note that the NOI and application fee are submitted separately to different addresses.

**Texas Commission on Environmental Quality**
**Storm Water & General Permits Team; MC - 228**
**P.O. Box 13087**
**Austin, Texas 78711-3087**

TCEQ-20022 (05/03) **Page 1 of 2**

# ATTACHMENT 1

## Texas Commission on Environmental Quality
## Payment Submittal Form

The storm water application fee shall be sent under separate cover to the Texas Commission on Environmental Quality.

This form must be used to submit your Storm Water Application Fee. Please complete the following information, staple your check in the space provided at the bottom of this document, and mail it to:

**BY REGULAR U.S. MAIL**

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

**BY OVERNIGHT/EXPRESS MAIL**

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

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Fee Code: GPA

Storm Water General Permit: TXR150000

Check / Money Order No: _____

Amount of Check/Money Order: _____

Date of Check or Money Order: _____

Name on Check or Money Order: _____

Facility / Site Name: _____

Facility / Site Physical Address: _____

City: _____ Zip Code: _____

**Staple Check In This Space**

# ATTACHMENT 1

## Completing the Notice of Intent for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR150000)

### A. Construction Site Operator Information

**Check boxes and Customer Reference Number**
These boxes designate the operator's status as a TCEQ "customer"—in other words, an individual or business that is involved in an activity that we regulate. We assign each customer a number that begins with "CN," followed by nine digits. ***This is not a permit number, registration number, or license number.*** In the remainder of this section, we will use "this customer" to mean the operator for Part A of the form.

- If this customer has not been assigned a Customer Reference Number or if this number is unknown, check "New" and leave the space for the Customer Reference Number blank.
- If this customer has already been assigned this number, enter the operator's Customer Reference Number and:
  - Check "No Change" if all the remaining customer information is the same as previously reported. However, you must still complete most blanks in this form for this notice of intent to be valid.
  - If this customer's information has changed since the last time it was reported to the TCEQ, check neither box and complete the remainder of this notice of intent.
- ***Do not enter a permit number, registration number, or license number in place of the Customer Reference Number.***

**Name**
Enter the legal name of this customer as authorized to do business in Texas. Include any abbreviations (LLC, Inc., etc.).

**Mailing Address**
Enter a central and general mailing address for this customer to receive mail from the TCEQ. For example, if this customer is a large company, this address might be the corporate or regional headquarters. On the other hand, for a smaller business, this address could be the same as the site address.

***If this is a street address, please follow US Postal Service standards.*** In brief, these standards require this information in this order:

- the "house" number—for example, the 1401 in 1401 Main St
- if there is a direction before the street name, the one- or two-letter abbreviation of that direction (N, S, E, W, NE, SE, SW, or NW)
- the street name (if a numbered street, do not spell out the number—for example, 6th St, not Sixth St)
- an appropriate abbreviation of the type of street—for example, St, Ave, Blvd, Fwy, Exwy, Hwy, Cr, Ct, Ln
- if there is a direction after the street name, the one- or two-letter abbreviation of that direction (N, S, E, W, NE, SE, SW, or NW)
- if there is a room number, suite number, or company mail code

**City, State, *and* ZIP Code**
Enter the name of the city, the two-letter USPS abbreviation for the state (for example, TX), and the ZIP Code. (Enter the full ZIP+4 if you know it.)

**Country Mailing Information**
If this address is ***outside*** the United States, enter the territory name, country code, and any non-ZIP mailing codes or other non–U.S. Postal Service features here. If this address is ***inside*** the United States, leave these spaces blank.

**Phone Number *and* Extension**
This number should correspond to this customer's mailing address given earlier. Enter the area code and phone number here. Leave "Extension" blank if this customer's phone system lacks this feature.

**Fax Number**
This number should correspond to this customer's mailing address given earlier. Enter the area code and fax number here.

**E-mail Address**
As with the mailing address, this should be a general address that is appropriate for e-mail to this customer's central or regional headquarters, if applicable.

***If "No Change" was checked for this customer, you may skip the rest of the fields in this part of the form and continue to the next part of the NOI.***

**Type of Operator**
Check *only one* box.

| *Check ...* | *if this customer* . |
|---|---|
| **Individual** | is a person and has not established a business to do whatever causes them to be regulated by us. |
| **Sole Proprietorship—D.B.A.** | is a business that is owned by only one person and has not been incorporated. This business may:<br>• be under the person's name<br>• have its own name ("doing business as," or d.b.a.)<br>• have any number of employees |
| **Partnership** | is a business that is established as a partnership as defined by the Texas Secretary of State's Office. |
| **Corporation** | meets all of these conditions:<br>• is a legally incorporated entity under the laws of any state or country<br>• is recognized as a corporation by the Texas Secretary of State<br>• has proper operating authority to operate in Texas |
| **Federal, state, county, or city government (as appropriate)** | is either an agency of one of these levels of government or the governmental body itself (If a utility district, water district, tribal government, college district, council of governments, or river authority, check "Other" and write in the specific type of government.) |
| **Other** | fits none of the above descriptions. Enter a short description of the type of customer in the blank provided. |

**Independent Operator?**
Check "No" if this customer is a subsidiary or part of a larger company. Otherwise, check "Yes."

**Number of Employees**
Check one box to show the number of employees for this customer's entire company, at all locations. ***This is not necessarily the number of employees at the site named in this NOI.***

**Federal Tax ID**
All businesses, except for some small sole proprietors, should have a federal taxpayer identification number (TIN). Enter this number here. Use no prefixes, dashes, or hyphens. Individuals and sole proprietors do not need to provide a federal tax ID.

**State Franchise Tax ID**
Corporations and limited liability companies that operate in Texas are issued a franchise tax identification number. If this customer is a corporation or limited liability company, enter this number here.

**DUNS Number**
Most businesses have a DUNS (Data Universal Numbering System) number issued by Dun and Bradstreet Corp. If this customer has one, enter it here.

### B. Billing Address

We will mail the annual fee invoice for this site to the address entered in this section.

**Name**
Enter the legal name of the person or business to which we should mail this site's fee invoice each year.

**Mailing Address**
Enter the specific mailing address to which we should mail this site's fee invoice each year. If this is a street address, please follow the US Postal Service standards as described under "A. Construction Site Operator Information" on page 1 of these instructions.

**City, State, *and* ZIP Code**
Enter the name of the city, the two-letter USPS abbreviation for the state (for example, TX), and the ZIP Code. (Enter the full ZIP+4 if you know it.)

**Country Mailing Information**
If this address is ***outside*** the United States, enter the territory name, country code, and any non-ZIP mailing codes or other non–U.S. Postal

# ATTACHMENT 1

Service features here. If this address is ***inside*** the United States, leave these spaces blank.

## C. Project / Site Information

**Check boxes *and* Regulated Entity Reference Number**
These boxes designate this site's status as a TCEQ "regulated entity"—in other words, a location where an activity that we regulate occurs. We assign each regulated entity a number that begins with "RN," followed by nine digits. ***This is not a permit number, registration number, or license number.***

- If this site has not been assigned a Regulated Entity Reference Number or if this number is unknown, check "New" and leave the space for the Regulated Entity Reference Number blank.
- If this site has already been assigned this number, enter the Regulated Entity Reference Number and:
  - Check "No Change" if all the remaining information is the same as previously reported. However, even if there has been no change, you must complete this section at least through "E-mail Address" for this NOI to be valid.
  - If this site's information has changed since the last time it was reported to the TCEQ, check neither box and complete the remainder of this notice of intent.
- ***Do not enter a permit number, registration number, or license number in place of the Regulated Entity Reference Number.***

**Name**
Enter the name by which you want this site to be known to the TCEQ.

**Mailing Address**
Enter the specific mailing address for this site. If this is a street address, please follow the US Postal Service standards as described under "A. Construction Site Operator Information" on page 1 of these instructions. If the project / site's mailing address is the same as what is provided in Section A, you may enter "Same as Section A".

**City, State, *and* ZIP Code**
Enter the name of the city, the two-letter USPS abbreviation for the state (for example, TX), and the ZIP Code. (Enter the full ZIP+4 if you know it.)

**Physical Address**
Enter the physical address of the site itself. TCEQ staff should be able to use this address to find the site. Please follow the US Postal Service standards as described under "A. Construction Site Operator Information" on page 1 of these instructions. If the project / site does not have a physical address, enter "No Address".

**City, County, *and* ZIP Code**
Enter the name of the city, the county, and the ZIP Code. (Enter the full ZIP+4 if you know it.) This information must be provided even if you have entered "No Address" in the previous field.

**Location Access Description**
Enter a physical description of the location of the site based on highway intersections and/or permanent landmarks.

**Latitude *and* Longitude**
Enter the latitude and longitude of the site in ***either*** degrees, minutes, and seconds ***or*** decimal form.

For help obtaining the latitude and longitude, go to:
**http://www.tnrcc.state.tx.us/gis/drgview.html**

**Standard Industrial Classification (SIC) Code and Activity Description**

Provide the SIC code that best describes the construction activity being conducted at the site.

For help with SIC codes, go to:
**http://www.osha.gov/oshstats/sicser.html**

In addition to the SIC code, you must also provide a description of the construction activity being conducted at the site. This may include such descriptions as: "Apartment Building Construction" or "Shopping Center Construction."

**Storm Water Pollution Prevention Plan**
This plan identifies the areas and activities that could produce contaminated runoff at your site and then tells how you will ensure that this contamination is mitigated. For example, in describing your mitigation measures, your site's plan might identify the devices that collect and filter storm water, tell how those devices are to be maintained, and tell how frequently that maintenance is to be carried out. ***You must develop this plan before you complete this NOI.*** This plan must be available for a TCEQ investigator to review on request. Specific requirements for the development of the plan can be found in the *Texas Pollutant Discharge Elimination System Construction General Permit (TXR150000).*

**Estimated Area of Land Disturbed**
Provide the approximate number of acres that the construction site will disturb. It is appropriate to enter a value less than 5, only if the project is part of a larger common plan that disturbs five or more acres. If the acreage is less than 1, enter 1. "Disturb" means any clearing, grading, excavating, or other similar activities.

**Is the site located on Indian Country Lands?**
Check "Yes" only if the site is on a reservation or other areas designated by the federal government as Indian Country Lands. If not, check "No."

**Destination of Storm Water Discharge**
The storm water from your site eventually reaches a receiving water body such as a local stream or lake, possibly via a drainage ditch. The discharge may initially be into a municipal separate storm sewer system (MS4). Check the appropriate boxes for whether storm water is discharged into an MS4. If you checked "Yes" to "An MS4?", then enter the name of the entity that operates the storm sewer—often a city, town, or utility district, but possibly another form of government.

You must also provide the name of the water body that receives the discharge from the construction site (a local stream or lake). Storm water may be discharged directly to a receiving stream or via a storm sewer system. If known, please include the segment number if the discharge is to a classified water body.

For a map that includes segment numbers, go to:
**http://www.tnrcc.state.tx.us/water/quality/data/index.html**

## D. Contact

Give all the relevant information for the person whom TCEQ can contact if there are questions about any of the information on this form—perhaps the same person who completed the form.

## E. Payment Information

Provide the number and account holder name from the check or money order used to pay the $100 application fee.

## F. Certification

The operator must sign and date this statement to validate this NOI. Be sure to enter the full legal name of the person signing the form and the relevant title—for example, "Operator," "Vice-President," or "Partner." Use the "Prefix" blank for such titles as Dr., Mr., or Ms., as desired. Use the "Suffix" blank for such designations as Ph.D., Jr., Sr., III, or J.D., if applicable.

For a corporation, the application shall be signed by a responsible corporate officer. A responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this application, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. regional administrator of the United States Environmental Protection Agency).

## Questions?

If you have questions about any of the information on this form, contact our Storm Water Program at 512/239-4671 or look for "Storm Water" on our Web site:

**www.tceq.state.tx.us**

**ATTACHMENT 2**

# CONSTRUCTION SITE NOTICE

**FOR THE**
**Texas Commission on Environmental Quality (TCEQ)**
**Storm Water Program**

## TPDES GENERAL PERMIT TXR150000

The following information is posted in compliance with **Part II.D.2.** of the TCEQ General Permit Number TXR150000 for discharges of storm water runoff from construction sites. Additional information regarding the TCEQ storm water permit program may be found on the internet at:
www.tnrcc.state.tx.us/permitting/waterperm/wwperm/tpdestorm

| | |
|---|---|
| Contact Name and Phone Number: | |
| Project Description:<br><br>(Physical address or description of the site's location, estimated start date and projected end date, or date that disturbed soils will be stabilized) | |
| Location of Storm Water Pollution Prevention Plan : | |

For Construction Sites Authorized Under Part II.D.2. (Obtaining Authorization to Discharge) the following certification must be completed:

I _____ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.D.2. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A storm water pollution prevention plan has been developed and implemented according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4 system. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

_____ _____
Signature and Title Date

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**ATTACHMENT 3**

## TPDES OPERATOR'S INFORMATION

Owner's Name and Address: City of Houston

Mr. _____
(City Official)

_____
(Department)
P. O. Box 1562
Houston, Texas 77251-1562
(713) 247-1000

Contractors' Names and Addresses:

General Contractor: _____

Telephone: _____

Site Superintendent: _____

Telephone: _____

Erosion Control and Maintenance Inspection: _____

Telephone: _____

Subcontractors' Names and Addresses:

_____ _____

Phone: _____ Phone: _____

**Note: Insert name, address, and telephone number of person or firms**

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## ATTACHMENT 4

## CONTRACTOR'S / SUBCONTRACTOR'S

# CERTIFICATION FOR TPDES PERMITTING

I certify under penalty of law that I understand the terms and conditions of TPDES General Permit No. TXR150000 and the Storm Water Pollution Prevention Plan for the construction site identified as part of this certification.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

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**ATTACHMENT 5**

# EPA NPDES Construction Inspection Form

The following inspection is being performed in compliance with Part IV.D.4. of the NPDES Region 6 Storm Water Construction General Permit [63 Fed. Reg. 36502] and being retained in accordance with Part V of the Permit. Qualified personnel (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, placement and effectiveness of structural control measures, and locations where vehicles enter or exit the site. Inspections shall be performed at least once every 14 days and within 24 hours of the end of a storm event of 0.5 inches or greater. Where sites have been temporarily stabilized, runoff is unlikely due to winter conditions, or during seasonal arid periods in arid areas (0-10 inches of rainfall annually) and semi-arid areas (10-20 inches annually) such inspections shall be conducted at least once every month. This form is primarily intended for use with construction projects in Texas and New Mexico. Permittees on Indian Country lands in Oklahoma, Louisiana and Arkansas and some oil and gas facilities in Oklahoma may use this form if they are eligible for this permit. Other facilities need to check with their NPDES authority before using this form.

If you do not know your NPDES Permit Number, contact the NOI Processing Center at (301)495-4145. This form was prepared as an example and it is not a required form for use with the permit. Alternative forms may be used if they contain all of the required information as set forth in the permit. This form and additional information regarding the NPDES Region 6 storm water program may be found on the Internet at http://www.epa.gov/region6/sw/. Any person with a complaint about the operation of this facility in regards to this permit should contact EPA Region 6 at (214)665-7112.

| | |
|---|---|
| Permit Number(s) covered by this inspection (e.g. owners, developers, general contractor, builders) | |
| Signature and Certification in accordance with Part VI.G of the permit: | I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.<br><br>Signature_____Date_____ |
| Date of Inspection | |
| Inspector Name | |
| Is there a copy of the permit language with the SWPPP? | ☐ YES ☐ NO |
| Is the inspector qualified and are the qualifications documented in the SWPPP? | ☐ YES ☐ NO |
| Is an NPDES storm water construction sign posted at the entrance for all permittees? | ☐ YES ☐ NO |

You may want to use EPA Region 6 construction checklist to assure components of the SWPPP are complete. This form, the construction sign, and the checklist are available on the Region 6 NPDES Storm Water Forms and Documents web page which may be found on the internet at http://www.epa.gov/earth1r6/6en/w/formsw.htm In addition to the checklist, you should provide a narrative (see next page) on the existing Best Management Practices and Structural Controls found during each inspection. Any problems identified in an inspection should be corrected within 7 days. The inspection should cover all components of the SWPPP and all potential pollutants. While eroded soil is the primary pollutant of concern, do not forget to inspect for other pollutant sources such as fuel tanks, paints, solvents, stabilization materials, concrete hardner, batch plants, and construction debris. The inspector will need to update the SWPPP to reflect findings of the inspection. The site map should be updated after an inspection to show controls that have been added or removed, to ensure the site map is kept current in accordance with Part IV.C. of the permit.

Revision 4, March 1, 2000

## ATTACHMENT 5

Narrative Findings of the inspection:

Observations should include any findings of Best Management Practices or controls that are not in accordance with the SWPPP. If a control is not in place or failed, observe the reason why. A control removed temporarily for work is not necessarily a violation if properly recorded in the SWPPP. If it has been removed, record why it was removed and, if applicable, when it will be reinstalled. If the control has failed, observe the conditions so a conclusion may be made as to wether the control failed for improper maintenance or improper design. The qualified inspector will know when a failed control is inadequate and should be replaced by an improved control mechanism. Qualified inspectors are to have authority to make changes to the SWPPP to assure compliance. Controls that have not been installed should be given a reason why they are not installed and/or a scheduled date for installation if they are designed for a later phase of construction. After the inspection, the SWPPP and its site map should be updated to reflect current conditions of controls and Best Management Practices at the time of the inspection. This includes removing uninstalled controls from the site map or otherwise denoting on the site map if they are no longer installed if the controls have been removed because they are no longer necessary (e.g. stabilization has been achieved in that area).

**ATTACHMENT 6**

# City of Houston

Storm Water Pollution Prevention Plan
Construction Site Inspection Report

TPDES/EPA Permit Number _____

COH Storm Water Quality Permit Number _____

DATE _____

☐ No exceptions noted.

The following must be corrected prior to continuing work:

☐ Public Notice improperly posted
☐ Initial Construction Site Inspection Report information requires updating
☐ Copy of NOI not on site
☐ Storm water pollution prevention plan not on site
☐ Erosion and sediment controls improperly installed
☐ Erosion and sediment control devices improperly maintained
☐ Fueling or washout areas not properly protected
☐ Portocan or other sanitary facilities not properly protected
☐ Self-inspection and maintenance records incomplete
☐ Sediment from site outside area of construction
☐ Other (see description below)

_____

_____

Please contact the Storm Water Quality Engineer at
611 Walker, RA-257, Houston TX 77002
713-837-7383 fax 713-837-0570

Once the above items have been corrected, call to arrange for reinspection. No further inspections for any construction related activity shall be made until the above items have been corrected.

| Inspector's Signature | Contractor's Signature |
|---|---|
| Inspector's Name | Contractor's Name ☐ not present |

Distribution Stormwater Quality Engineer, Code Enforcement, Inspector, Operator
(Operator is Contractor)

Form _____ (10-01-01)

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## ATTACHMENT 7

**Notice of Termination (NOT) for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR150000)**

**TCEQ Office Use Only**
TPDES Permit Number: TXR15__|__|__|__|__| - NO
GIN Number: __|__ __|__ __|__|__|

For help completing this application, read the TXR150000 NOI Instructions (TCEQ-20023-Instructions).

**A. TPDES Permit Number:** TXR15_____

**B. Construction Site Operator** Customer Reference Number: CN _____
Name: _____
Mailing Address: _____
City: _____ State: -- _____ Zip Code: _____
Country Mailing Information (*if outside USA*) Territory: _____ Country Code: _____ Postal Code: _____
Phone Number: _____ Extension: _____ Fax Number: _____
E-mail Address: _____

**C. Project / Site Information** Regulated Entity Reference Number: RN_____
Name: _____
Physical Address: _____
Location Access Description: _____
City: _____ County: -- _____ Zip Code: _____

**D. Contact** - If the TCEQ needs additional information regarding this termination, who should be contacted?
Name: _____ Title: _____
Phone Number: _____ Extension: _____ Fax Number: _____
E-mail Address: _____

**E. Certification**
I certify under penalty of law that authorization under the TPDES Construction General Permit (TXR150000) is no longer necessary based on the provisions of the general permit. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with construction activity under the general permit TXR150000, and that discharging pollutants in storm water associated with construction activity to waters of the U.S. is unlawful under the Clean Water Act where the discharge is not authorized by a TPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act.

**Construction Site Operator Representative:**

Prefix: _____ First: _____ Middle: _____
Last: _____ Suffix: _____
Title: _____

Signature: _____ Date: _____

If you have questions on how to fill out this form or about the storm water program, please contact us at (512) 239-4671. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at (512) 239-3282.

The completed NOT must be mailed to the following address:

**Texas Commission on Environmental Quality**
**Storm Water & General Permits Team; MC - 228**
**P.O. Box 13087**
**Austin, Texas 78711-3087**

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# ATTACHMENT 7

## Completing the Notice of Termination for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR150000)

**Who May File a Notice of Termination (NOT) Form**
Permittees disturbing 5 acres or more (or part of a larger common plan of development or sale disturbing 5 acres or more) who are presently covered under the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit must submit a Notice of Termination (NOT) when final stabilization has been achieved on all portions of the site that is the responsibility of the permittee; or another permitted operator has assumed control over all areas of the site that have not been finally stabilized and all silt fences and other temporary erosion controls have either been removed, scheduled for removal as defined in the SWP3, or transferred to a new operator if the new operator has sought permit coverage. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

**Final Stabilization** occurs when either of the following conditions are met:

(a) All soil disturbing activities at the site have been completed and a uniform (e.g, evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or goetextiles) have been employed.

(b) For individual lots in a residential construction site by either:

(1) the homebuilder completing final stabilization as specified in condition (a) above; or

(2) the homebuilder establishing temporary stabilization for an individual lot prior to the time of transfer of the ownership of the home to the buyer and after informing the homeowner of the need for, and benefits of, final stabilization.

(c) For construction activities on land used for agricultural purposes (e.g. pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to a surface water and areas which are not being returned to their preconstruction agricultural use must meet the final stabilization conditions of condition (a) above.

### A. TPDES Permit Number
Provide the TPDES permit number assigned to the operator of the construction site.

### B. Construction Site Operator Information
**Customer Reference Number**
This number designates the operator's status as a TCEQ "customer"—in other words, an individual or business that is involved in an activity that we regulate. We assign each customer a number that begins with "CN," followed by nine digits. ***This is not a permit number, registration number, or license number.*** In the remainder of this section, we will use "this customer" to mean the operator for Part B of the form.

- If this customer has not been assigned a Customer Reference Number, leave the space for the Customer Reference Number blank.
- If this customer has already been assigned this number, enter the operator's Customer Reference Number.
- ***Do not enter a permit number, registration number, or license number in place of the Customer Reference Number.***

**Name**
Enter the legal name of this customer as authorized to do business in Texas. Include any abbreviations (LLC, Inc., etc.).

**Mailing Address**
Enter a central and general mailing address for this customer to receive mail from the TCEQ. For example, if this customer is a large company, this address might be the corporate or regional headquarters. On the other hand, for a smaller business, this address could be the same as the site address.

***If this is a street address, please follow US Postal Service standards.*** In brief, these standards require this information in this order:

- the "house" number—for example, the 1401 in 1401 Main St
- if there is a direction before the street name, the one- or two-letter abbreviation of that direction (N, S, E, W, NE, SE, SW, or NW)
- the street name (if a numbered street, do not spell out the number—for example, 6th St, not Sixth St)
- an appropriate abbreviation of the type of street—for example, St, Ave, Blvd, Fwy, Exwy, Hwy, Cr, Ct, Ln
- if there is a direction after the street name, the one- or two-letter abbreviation of that direction (N, S, E, W, NE, SE, SW, or NW)
- if there is a room number, suite number, or company mail code

**City, State, *and* ZIP Code**
Enter the name of the city, the two-letter USPS abbreviation for the state (for example, TX), and the ZIP Code. (Enter the full ZIP+4 if you know it.)

# ATTACHMENT 7

**Country Mailing Information**
If this address is ***outside*** the United States, enter the territory name, country code, and any non-ZIP mailing codes or other non–U.S. Postal Service features here. If this address is ***inside*** the United States, leave these spaces blank.

**Phone Number *and* Extension**
This number should correspond to this customer's mailing address given earlier. Enter the area code and phone number here. Leave "Extension" blank if this customer's phone system lacks this feature.

**Fax Number**
This number should correspond to this customer's mailing address given earlier. Enter the area code and fax number here.

**E-mail Address**
As with the mailing address, this should be a general address that is appropriate for e-mail to this customer's central or regional headquarters, if applicable.

## C. Project / Site Information

**Regulated Entity Reference Number**
This number designates this site's status as a TCEQ "regulated entity"—in other words, a location where an activity that we regulate occurs. We assign each regulated entity a number that begins with "RN," followed by nine digits. ***This is not a permit number, registration number, or license number.***

- If this site has not been assigned a Regulated Entity Reference Number, leave the space for the Regulated Entity Reference Number blank.
- If this site has already been assigned this number, enter the Regulated Entity Reference Number.
- ***Do not enter a permit number, registration number, or license number in place of the Regulated Entity Reference Number.***

**Name**
Enter the name by which you want this site to be known to the TCEQ.

**Physical Address**
Enter the physical address of the site itself. TCEQ staff should be able to use this address to find the site.

**Location Description**
Enter a physical description of the location of the site based on highway intersections and/or permanent landmarks.

**City, County, *and* ZIP Code**
Enter the name of the city, the county, and the ZIP Code. (Enter the full ZIP+4 if you know it.)

## D. Contact

Give all the relevant information for the person whom TCEQ can contact if there are questions about any of the information on this form—perhaps the same person who completed the form.

## E. Certification

The operator must sign and date this statement to validate this NOI. Be sure to enter the full legal name of the person signing the form and the relevant title—for example, "Operator," "Operator's attorney," or "Senior Site Manager." Use the "Prefix" blank for such titles as Dr., Mr., or Ms., as desired. Use the "Suffix" blank for such designations as Ph.D., Jr., Sr., III, or J.D., if applicable.

For a corporation, the application shall be signed by a responsible corporate officer. A responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this application, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. regional administrator of the United States Environmental Protection Agency).

## Questions?

If you have questions about any of the information on this form, contact our Storm Water Program at 512/239-4671 or look for "Storm Water" on our Web site:
**www.tceq.state.tx.us**

Section 01422

# REFERENCE STANDARDS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

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

### 1.02 QUALITY ASSURANCE

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

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

C. Request clarification from Project Manager before proceeding should specified reference standards conflict with Contract documents.

### 1.03 SCHEDULE OF REFERENCES

| | |
|---|---|
| AASHTO | American Association of State Highway and Transportation Officials<br>444 North Capitol Street, N.W.<br>Washington, DC 20001 |
| ACI | American Concrete Institute<br>P.O. Box 9094<br>Farmington Hills, MI 48333-9094 |
| AGC | Associated General Contractors of America<br>333 John Carlyle Street<br>Alexandria, VA 22314 |
| AI | Asphalt Institute<br>Research Park Drive<br>P.O. Box 14052<br>Lexington, KY 40512 |

| | |
|---|---|
| AITC | American Institute of Timber Construction<br>7012 S. Revere Parkway, Suite 140<br>Englewood, CO 80112 |
| AISC | American Institute of Steel Construction<br>One East Wacker Dr.<br>Chicago, IL 60601 |
| AISI | American Iron and Steel Institute<br>1101 17th Street NW, Suite 1300<br>Washington, DC 20036 |
| ASME | American Society of Mechanical Engineers<br>Three Park Avenue<br>New York, NY 10016 |
| ANSI | American National Standards Institute<br>1819 L Street NW<br>Sixth Floor<br>Washington, D.C. 20036 |
| APA | American Plywood Association<br>Box 11700<br>Tacoma, WA 98411 |
| API | American Petroleum Institute<br>1220 L Street, N.W.<br>Washington, DC 20005 |
| AREA | American Railway Engineering and Maintenance-of-Way-Association<br>8201 Corporate Drive, Suite 1125<br>Landover, Maryland 20785 |
| ASTM | American Society for Testing and Materials<br>100 Barr Harbor Drive<br>West Conshohocken, PA 19428 |
| AWPA | American Wood-Preservers' Association<br>P.O. Box 5690<br>Granbury, TX 76049 |
| AWS | American Welding Society<br>550 NW 42nd Avenue<br>Miami, FL 33126 |

| | |
|---|---|
| AWWA | American Water Works Association<br>6666 West Quincy Avenue<br>Denver, CO 80235 |
| COH | City of Houston<br>P.O. Box 1562<br>Houston, TX 77251-1562 |
| CLFMI | Chain Link Fence Manufacturers Institute<br>9891 Broken Land Parkway, Suite 300<br>Columbia, MD 21046 |
| CRSI | Concrete Reinforcing Steel Institute<br>933 Plum Grove Road<br>Schaumburg, IL 60173-4758 |
| EJMA | Expansion Joint Manufacturers Association<br>25 North Broadway<br>Tarrytown, NY 10591 |
| FS | Federal Standardization Documents<br>General Services Administration<br>Specifications Unit (WFSIS)<br>7th and D Streets, S.W.<br>Washington, DC 20406 |
| ICEA | Insulated Cable Engineer Association<br>P.O. Box 440<br>S. Yarmouth, MA 02664 |
| IEEE | Institute of Electrical and Electronics Engineers<br>445 Hoes Lane<br>P.O. Box 440<br>Piscataway, NJ 08855-459 |
| ISA | International Society of Arboriculture<br>P.O. Box 3129<br>Champaign, IL 61826-3129 |
| MIL | Military Specifications<br>General Services Administration<br>Specifications Unit (WFSIS)<br>7th and D Streets, S.W.<br>Washington, DC 20406 |

| | |
|---|---|
| NACE | National Association of Corrosion Engineers<br>1440 South Creek Drive<br>Houston, TX 77084-4906 |
| NEMA | National Electrical Manufacturers' Association<br>1300 North 17th Street, Suite 1847<br>Rosslyn, VA 22209 |
| NFPA | National Fire Protection Association<br>1 Batterymarch Park<br>P.O. Box 9101<br>Quincy, MA 02269-9101 |
| OSHA | Occupational Safety Health Administration<br>U.S. Department of Labor<br>Office of Public Affairs – Room N3647<br>Washington, DC 20210 |
| PCA | Portland Cement Association<br>5420 Old Orchard Road<br>Skokie, IL 60077-1083 |
| PCI | Prestressed Concrete Institute<br>209 W. Jackson Blvd.<br>Chicago, IL 60606 |
| SDI | Steel Deck Institute<br>P.O. Box 25<br>Fox River Grove, IL 60021 |
| SSPC | Society for Protective Coatings (Steel Structures Painting Council)<br>40 24th Street, Sixth Floor<br>Pittsburgh, PA 15222 |
| TAC | Texas Administrative Code<br>Texas Water Resources Conservation Commission<br>P. O. Box 13087<br>Library MC-196<br>Austin, TX 78711-3087 |
| TxDOT | Texas Department of Transportation<br>125 East 11th Street<br>Austin, TX 78701-2483 |

| | |
|---|---|
| UL | Underwriters' Laboratories, Inc.<br>333 Pfingston Road<br>Northbrook, IL 60062 |
| UNI-BELL | UNI-BELL Pipe Association<br>2655 Villa Creek Drive, Suite 155<br>Dallas, TX 75234 |

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01450

# CONTRACTOR'S QUALITY CONTROL

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Quality assurance and control of Installation and manufacturers' field services and reports.

### 1.02 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. Monitor quality control over Suppliers, manufacturers, Products, services, site conditions and workmanship, to produce work of specified quality at no additional cost to the City.

B. Comply fully with manufacturers' Installation instructions, including each step in sequence.

C. Request clarification from Project Manager before proceeding when manufacturers' instructions conflict with the Contract.

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

E. Perform the Work by persons qualified to produce a specified level of workmanship.

### 1.03 REFERENCES

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

### 1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual Specification sections, or as required by Project Manager, provide Product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and Installation, quality of workmanship, start-up of equipment, operator training, testing, adjusting and balancing of equipment as applicable and to initiate required operation. Conform to minimum time requirements for start-up operations and operator training when provided in Specification sections.

B. At Project Manager's request, submit qualifications of manufacturers' representative to Project Manager 15 days in advance of required representatives' services. Representative is subject to approval by Project Manager.

C. Manufacturer's representatives shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to a manufacturer's written instructions. Submit report within 14 days of observation to Project Manager for review.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01452

# INSPECTION SERVICES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Inspection services and references

### 1.02 INSPECTION

A. City Engineer will appoint an Inspector to represent the City and perform inspections, tests, and other services specified in individual Specification sections.

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

C. The independent firm will submit reports to Project Manager, indicating observations and results of tests and indicating compliance or noncompliance with Contract requirements.

D. Contractor shall assist and cooperate with the Inspector; furnish samples of materials, design mix, equipment, tools, and storage.

E. Contractor shall notify Project Manager 24 hours prior to expected time for operations requiring services.

F. Contractor shall sign and acknowledge reports for Inspector.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION - Not Used

END OF SECTION

Section 01454

# TESTING LABORATORY SERVICES

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

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

### 1.02 REFERENCES

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

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

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

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

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

### 1.03 SELECTION AND PAYMENT

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

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

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

D. The City will deduct a minimum two-hour charge for testing laboratory time from periodic progress payment when operations requiring testing or inspection are canceled without prior notification.

E. The City will deduct cost of retesting from periodic progress payment whenever failed work is removed, replaced and retested.

1.04 QUALIFICATION OF LABORATORY

A. Meet laboratory requirements of ASTM E 329 and applicable requirements of ASTM C 1077, ASTM D 3666, and ASTM D 3740.

B. Meet ISO/TEC Guide 17025 conditions for accreditation by the American Association for Laboratory Accreditation (A2LA) in specific fields of testing required in individual Specification sections.

C. If laboratory subcontracts are part of the testing services, such work will be placed with a laboratory complying with the requirements of this Section.

1.05 LABORATORY REPORTS

A. Testing laboratory shall provide and distribute copies of laboratory reports to the distribution list Project Manager provides at the pre-construction conference.

B. Keep one copy of each laboratory report distributed or faxed at the site field office for duration of the Work.

C. Laboratory will fax material supplier, Contractor and Project Manager reports that indicate failing test results by no later than close of business on the working day following test completion and review.

1.06 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter, or enlarge requirements of the Contract.

B. Laboratory may not approve or accept any portion of the Work.

C. Laboratory may not assume Contractor duties.

D. Laboratory has no authority to stop the Work.

1.07 CONTRACTOR RESPONSIBILITIES

A. Provide safe access to the Work and to manufacturer's facilities for Project Manager and for testing laboratory personnel.

B. Provide testing laboratory with a copy of the Construction Schedule and a copy of each update to Construction Schedule.

C. Notify Project Manager and testing laboratory during normal working hours of the day previous to expected time for operations requiring inspection and testing services. When Contractor fails to make timely prior notification, do not proceed with the operations requiring inspection and testing services.

D. Notify Design Consultant 24 hours in advance when Specification requires presence of Design Consultant for sampling or testing.

E. Request and monitor testing as required to provide timely results and to avoid delays to the Work. Provide samples to laboratory in sufficient time to allow required test to be performed in accordance with specified test methods before intended use of the Product.

F. Cooperate with laboratory personnel in collecting samples on site. Provide incidental labor and facilities for safe access to the Work to be tested, to obtain and handle samples at site or at source of Products to be tested, and to facilitate tests and inspections including storage and curing of test samples.

G. Make arrangements with laboratory through Project Manager. Payment for additional testing will be made in accordance with Document 00700 - General Conditions:

1. Re-testing required for failed tests.

2. Re-testing for nonconforming work.

3. Additional sampling and tests requested beyond specified requirements.

4. Insufficient notification of cancellation of tests for work scheduled but not performed.

PART 2 P R O D U C T S - Not Used

## PART 3 EXECUTION

### 3.01 CONDUCTING TESTING

A Conform to laboratory sampling and testing methods specified in individual Specification sections to the latest issues of ASTM standards, TxDOT methods, or other recognized test standards as approved by Project Manager.

B Requirements of this Section shall also apply to those tests for approval of materials, for mix designs, and for quality control of materials as performed by employed testing laboratories.

END OF SECTION

Section 01502

# MOBILIZATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Mobilization of construction equipment and facilities onto the site.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Price Contracts. If Contract is Unit Price Contract, measurement for mobilization is on a lump sum basis.

B. Stipulated Price (Lump Sum) Contract. If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

C. Mobilization payments will be included in monthly payment estimates upon written application by Contractor subject to the following provisions:

1. Authorization for payment of 50 percent of that portion of Contract Price designated for mobilization will be made upon receipt and approval by Project Manager of the following items, as applicable:
   a. Safety Program (Document 00700, Paragraph 10.1.1).
   b. Site Utilization Plan (Section 01145).
   c. Schedule of Values (Section 01292), if any.
   d. Initial Construction Photographs (Section 01321), if needed.
   e. Preliminary Construction Schedule and Billing Forecast (Section 01325).
   f. Construction Schedule (Section 01325 or Section 01326, as applicable).
   g. Submittal Schedule (Section 01330).
   h. Site specific Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI) along with storm water application fee (Section 01410), if required.
   i. Contractor's Quality Control Plan (Section 01450), if required.
   j. Establishment of a Field Office for Project Manager meeting requirements of Section 01520 - Temporary Field Office, when an office is required by the Contract.
   k. Traffic Control Plan (Section 01555), if required.
   l. Plan for Control of Ground and Surface Water (Section 01578), if required.
   m. Project Signs Submittal (Section 01580).

n. Trench Safety Program (Section 02260), if required.
o. Dewatering plan, when required.

2. Authorization for payment of the balance of that portion of Contract Price designated for mobilization will be made upon completion of the Work amounting to five percent of Original Contract Price. The amount of Contract Price designated for mobilization may not be applied in computing whether or not five percent of the Original Contract Price has been obtained.

3. Mobilization payments will be subject to retainage amounts stipulated in Document 00700 – General Conditions.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01504

# TEMPORARY FACILITIES AND CONTROLS

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Temporary facilities and necessary controls for the Project, including utilities, telephone, sanitary facilities, storage sheds and building, safety requirements, first aid equipment, fire protection, security measures, protection of the Work and property, access roads and parking, environmental controls, pest and rodent control and disposal of trash, debris and excavated material.

B. Facilities and controls specified in this section are considered minimum for the Project. Provide additional facilities and controls for proper execution of the Work and to meet Contractor's responsibilities for protection of persons and property.

### 1.02 CONTRACTOR'S RESPONSIBILITY

A. Comply with applicable requirements specified in other sections of Specifications.

1. Maintain and operate temporary facilities and systems to assure continuous service.

2. Modify and extend systems as the Work progress requires.

3. Completely remove temporary materials and equipment when no longer required.

4. Restore existing facilities used for temporary services to specified or original condition.

## PART 2 P R O D U C T S - NOT USED

## PART 3 E X E C U T I O N

### 3.01 TEMPORARY UTILITIES

A. Obtaining Temporary Service:

1. Make arrangements with utility service companies for temporary services.

2. Abide by rules and regulations of the utility service companies or authorities having jurisdiction.

3. Be responsible for utility service costs until Date of Substantial Completion. Included are fuel, power, light, heat, and other utility services necessary for execution, completion, testing, and initial operation of the Work.

B. Water:

1. Provide water required for and in connection with work to be performed and for specified tests of piping, equipment, devices, or for other use as required for proper completion of the Work.

2. Water to be drawn from public fire hydrants. Obtain transit meter from City of Houston, Department of Public Works and Engineering, Taps and Meters Section. Pay required deposit based on rates established by latest ordinance.

3. Provide and maintain an adequate supply of potable water for domestic consumption by Contractor personnel, Project Manager and representatives of the City.

C. Electricity and Lighting:

1. Provide electric power service required for the Work including required testing, lighting, operation of equipment, and other Contractor use.

2. Electric power service includes temporary power or generators required to maintain plant operations during scheduled shutdowns.

3. Minimum lighting level shall be 10 foot-candles for open areas; 20-foot-candles for stairs and shops. Provide a minimum of one 300-watt lamp for each 200 square feet of work area.

D. Temporary Heat and Ventilation:

1. Provide temporary heat necessary for protection or completion of the Work.

2. Provide temporary heat and ventilation to assure safe working conditions; maintain enclosed areas at a minimum of 50 degrees F.

E. Telephone:

1. Provide emergency telephone service at Project site for use by Contractor personnel and others performing work or furnishing services at the site.

2. Provide Houston-Metro lines, allowing unlimited calls, without charge in Greater Houston Metropolitan area with "call waiting" and "call forwarding" options. Provide one telephone answering machine with beeperless remote message retrieval capability.

F. Sanitary Facilities:

1. Provide and maintain sanitary facilities for persons on the site; comply with regulations of State and local departments of health.

2. Enforce use of sanitary facilities by construction personnel at site. Enclose sanitary facilities. Pit-type toilets are not permitted. No discharge will be allowed from these facilities. Collect and store sewage and waste so as not to cause nuisance or health problems. Haul sewage and waste off-site and properly dispose in accordance with applicable regulations.

3. Locate toilets near the Work site and secluded from view insofar as possible. Keep toilets clean and supplied throughout the course of the Work.

3.02 STORAGE SHEDS AND BUILDINGS

A. Provide adequately ventilated, watertight storage facilities with floor above ground level for Products susceptible to weather damage.

B. Storage of Products not susceptible to weather damage may be on blocks off the ground.

C. Store Products in a neat and orderly manner. Place Products to permit easy access for identification, inspection and inventory.

D. Fill and grade site for temporary structures to provide drainage away from temporary and existing buildings.

3.03 SAFETY REQUIREMENTS

A. Submit a safety program at the pre-construction meeting and follow the program in accordance with Document 00700 - General Conditions. Include

documented response to trench safety requirements of Section 02260 - Trench Safety System.

B. Conduct operations in strict accordance with applicable Federal, State and local safety codes and statutes and with good construction practice. Establish and maintain procedures for safety of all work, personnel and equipment involved in the Work.

C. Observe and comply with Texas Occupational Safety Act (Art. 5182a, V.C.S.) and with all safety and health standards promulgated by Secretary of Labor under Section 107 of Contract Work Hours and Standards Act, published in 29 CFR Part 1926 and adopted by Secretary of Labor as occupational safety and health standards under Williams-Steiger Occupational Safety and Health Act of 1970, and to other legislation enacted for safety and health of Contractor employees. Safety and health standards apply to Subcontractors and Suppliers as well as to the Contractor.

D. Observance of and compliance with safety regulations is Contractor's responsibility without reliance or superintendence of or direction by Project Manager. Immediately advise Project Manager of investigation or inspection by Federal Safety and Health inspectors of Contractor's or Subcontractor's work or place of work on site under the Contract, and after investigation or inspection, advise Project Manager of results. Submit one copy of accident reports to Project Manager within 10 days of occurrence.

E. Protect areas occupied by workmen using the best available devices for detection of lethal and combustible gases. Test devices frequently to assure functional capability. Constantly observe infiltration of liquids into the Work area for visual or odor evidence of contamination, and immediately take appropriate steps to seal off entry of contaminated liquids to the Work area.

F. Implement safety measures, including but not limited to safety personnel, first-aid equipment, ventilating equipment and other safety equipment specified or detailed on Drawings.

G. Maintain required coordination with City Police and Fire Departments during entire period covered by the Contract.

H. Include Project safety analysis in safety plan. Itemize major tasks and potential safety hazards. Plan to eliminate hazards or protect workers and public from each hazard.

3.04 FIRST AID EQUIPMENT

A. Provide a first aid kit throughout the construction period. List telephone numbers for physicians, hospitals, and ambulance services in each first aid kit.

B. Have at least one person thoroughly trained in first aid and CPR procedures present on the site when work is in progress. Contractor to conform to protocols and requirements for training and protection against "blood borne pathogens".

3.05 FIRE PROTECTION

A. Conform to specified fire protection and prevention requirements established by Federal, State, or local governmental agencies and as provided in Safety Program.

3.06 SECURITY MEASURES

A. Protect the Work, materials, equipment, and property from loss, theft, damage, or vandalism. Protect City property used in performance of the Contract.

B. If existing fencing or barriers are breached or removed for purposes of construction, provide and maintain temporary security fencing equal to existing.

3.07 PROTECTION OF UTILITIES AND PIPELINES

A. Prevent damage to existing public utilities during construction. Approximate locations of known utilities are shown on Drawings, but all lines may not be shown. Excavate with caution and repair lines damaged by construction operations.

B. Use the Utility Coordinating Committee One Call System, telephone number, (713) 223-4567, which must be called 48 hours in advance. The toll free telephone number is 1-800-669-8344, Texas One Call System.

C. Before excavating, locate underground utilities by appropriate means including the use of metal detection equipment, and probes, or by excavation or surveys. Repair damage caused by investigative work and by failure to locate or to preserve underground utilities.

D. Give utility owners a minimum five days notice before commencing excavation to allow time to locate utilities and make adjustments or relocations when they conflict with the Work. Include cost for temporary

relocation of water, wastewater, and storm drainage lines, necessary to accommodate construction, in unit prices for utility construction unless otherwise noted. Bypassing of sanitary waste to storm drainage facilities is not allowed.

E. Prior to excavation near pipelines, request a representative of the pipeline company to meet with Contractor and Project Manager at the site to discuss procedures to be used. Request pipeline company's representative to locate the pipelines in at least three locations: at each side and at centerline of proposed excavation of proposed utility. Also request representative and Project Manager to be present to observe Contractor operations when excavation is conducted within 15 feet of pipeline.

3.08 PROTECTION OF THE WORK AND PROPERTY

A. Preventive Actions

1. Take necessary precautions and actions to prevent damage, injury, or loss to the Work or public and private property, including:
   a. Storage of apparatus, supplies, and Products in an orderly, safe manner to limit interference with progress of the Work or work of other contractors, utility service companies, or the City's operations.
   b. Suitable storage for Products subject to damage by exposure to weather, theft, breakage, etc.
   c. Limitation of loading pressures imposed upon portions of the Work.
   d. Frequent clean up of refuse, scrap materials, and debris from construction operations, necessary to maintain the site in a safe and orderly condition.
   e. Provision of barricades and guard rails to protect pedestrian and traffic around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.

2. Protect public and private property adjacent to the site. Obtain written consent before entering or occupying privately-owned land except on easements provided for construction. Restore property damaged by construction operations to condition equal to or better than that existing before the damage.

B. Barricades and Warning Systems

1. Where work is performed on or adjacent to roadways, rights-of-ways, or public land, provide barricades, fences, lights, warning signs,

danger signals, and other precautionary measures necessary for protection of persons or property and for protection of the Work.

a. Erect sufficient barricades to keep vehicles and pedestrians from entering the Work. Paint barricades to be visible at night. From sunset to sunrise, provide at least one light at each barricade.

b. Maintain barricades, signs, lights, and provide watchmen until Project Manager approves removal. Whenever work creates encroachment onto public roadways, station flagmen to manage traffic flow in accordance with approved traffic control plan.

c. Conform to requirements of section 01555 – Traffic Control and regulation.

C. PROTECTION OF EXISTING STRUCTURES

1. Underground Facilities

a. Known Underground Facilities are shown on the Drawings but all Facilities may not be shown. Explore sufficiently ahead of trenching and excavation work to locate Underground Facilities in order to prevent damage to them and to prevent interruption of utility services. Restore damage to Underground Facilities to original condition at no additional cost to the City.

b. If necessary to avoid unanticipated Underground Facilities, Project Manager may make changes in location of the Work.

c. If permanent relocation of an Underground Facility is required and not provided for in the Contract documents, City Engineer will direct Contractor in writing to perform the Work under Modification provisions in Document 00700 - General Conditions.

2. Surface Structures include buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks, guard cables, fencing, and other facilities that are visible above the ground level.

3. Protection of Underground Facilities and Surface Structures:

a. Support in place and protect Underground Facilities and Surface Structures located within or adjacent to the limits of the Work from damage. Install supports as required by the owner of the structure. Satisfy Project Manager that the owner of the facility or structure has approved methods and procedures before installing structure supports.

b. Avoid moving or changing public utility or private corporation property without prior written consent of a responsible official of the facility or structure. Allow representatives of utilities to enter

the construction site for maintenance and repair purposes or to make necessary changes.

c. Notify utility and pipeline owners and operators of the nature of construction operations and dates when operations will be performed. When construction operations are required in immediate vicinity of existing structures, pipelines, or utilities, give a minimum of five working days advance notice. Probe and flag location of Underground Facilities prior to commencement of excavation. Keep flags in place until construction operations uncover the facility.

d. Assume risk for damages and expenses to Underground Facilities and Surface Structures within or adjacent to the Work.

D. Employ a structural engineer to ensure protection measures are adequate for the safety and integrity of structures and facilities.

E. PROTECTION OF INSTALLED PRODUCTS:

1. Provide protection of Installed Products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of the Work.

2. Control traffic to prevent damage to Products and surfaces.

3. Provide coverings to protect Products from damage. Cover projections, wall corners, jambs, sills, and exposed sides of openings in areas used for traffic and passage of materials in subsequent work.

3.09 ROADS AND PARKING

A. Prevent interference with traffic and operations of the City on existing roads.

B. Designate temporary parking areas to accommodate construction and City personnel. When site space is not adequate, provide additional off-site parking. Locate as approved by Project Manager.

C. Minimize use by construction traffic on existing streets and driveways.

D. Do not allow heavy vehicles or construction equipment in existing parking areas.

3.10 ENVIRONMENTAL CONTROLS

A. Use methods, equipment, and temporary construction necessary for control of environmental conditions at the site and adjacent areas.

B. Comply with statutes, regulations, and ordinances relating to prevention of environmental pollution and preservation of natural resources including National Environmental Policy Act of 1969, PL 91-190, Executive Order 11514.

C. Minimize impact to the surrounding environment. Do not use construction procedures that cause unnecessary excavation and filling of terrain, indiscriminate destruction of vegetation, air or stream pollution, or harassment or destruction of wildlife.

D. Limit disturbed areas to boundaries established by the Contract. Do not pollute on-site streams, sewers, wells, or other water sources.

E. Do not burn rubbish, debris or waste materials.

3.11 POLLUTION CONTROL

A. Provide methods, means, and facilities necessary to prevent contamination of soil, water or the atmosphere by discharge of Pollutants from construction operations.

B. Provide equipment and personnel to perform emergency measures to contain spillage, and to remove contaminated soils or liquids. Excavate and dispose of contaminated earth off-site in accordance with laws and regulations, and replace with suitable compacted fill and topsoil.

C. Provide systems necessary for control of Pollutants.

1. Prevent toxic concentrations of chemicals.

2. Prevent harmful dispersal of Pollutants into the environment.

D. Use equipment that conforms to current Federal, State, and local laws and regulations.

3.12 PEST AND RODENT CONTROL

A. Provide rodent and pest control as necessary to prevent infestation of construction or storage areas.

B. Employ methods and use materials that will not adversely affect conditions at site or on adjoining properties.

3.13 NOISE CONTROL

A. Provide vehicles, equipment, and use construction activities that minimize noise to the greatest degree practicable. Conform to noise levels of Chapter 30 –Noise and Sound Level Regulation, City Code of Ordinances, and latest OSHA standards. Do not permit noise levels to interfere with the Work or create a nuisance to surrounding areas.

B. Conduct construction operations during daylight hours except as approved by Project Manager.

C. Select construction equipment that operates with minimum noise and vibration. When directed by Project Manager, correct objectionable noise or vibration produced by operation of equipment at no additional cost to the City. Sound Power Level (PWL) of equipment shall not exceed 85 dbA (re: $10^{-12}$ watts) measured five feet from the equipment, or at a lower level if prescribed by City Ordinances. Equipment noise requirements are contained in equipment specifications.

3.14 DUST CONTROL

A. Use water or other methods approved by Project Manager to control amount of dust generated by vehicle and equipment operations.

3.15 WATER RUNOFF AND EROSION CONTROL

A. Comply with requirements of section 01410 – TPDES Requirements.

B. Conduct fill, grading and ditching operations and provide adequate methods necessary to control surface water, runoff, subsurface water, and water from excavations and structures in order to prevent damage to the Work, the site, or adjoining properties.

1. Plan and execute construction and earthwork by methods that control surface drainage from cuts and fills, and from borrow and waste disposal areas.

2. Minimize area of bare soil exposed at one time.

3. Provide temporary control measures, such as berms, dikes, and drains.

4. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

5. Construct fill and waste areas by selective placement of materials to eliminate erosion of surface silts or clays that may erode.

6. Direct water away from excavations, pits, tunnels, and other construction areas to prevent erosion, sedimentation or damage.

7. Maintain existing drainage patterns adjacent to the site by constructing temporary earth berms, sedimentation basins, retaining areas, and temporary ground cover.

8. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to the site or adjoining areas, in conformance with environmental requirements.

9. Inspect earthwork periodically to detect any evidence of erosion. Take corrective measures as required to control erosion.

END OF SECTION

Section 01520

# TEMPORARY FIELD OFFICE

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Temporary field office building and associated parking area.

### 1.02 FACILITY DESCRIPTION

A. Temporary field office to be utilized by authorized representatives of the City to coordinate and monitor daily construction activities performed by Contractor.

B. Field office shall be a non-smoking facility.

## PART 2 P R O D U C T S

### 2.01 FIELD OFFICE

A. General:

1. Locate office in vicinity of the Work at a location approved by Project Manager or where indicated on Drawings.

2. Furnish, Install and maintain field office for exclusive use of authorized representatives of the City. Provide sufficient room for Project meetings and Inspector's office.

3. Provide office within 10 days of Date of Commencement of the Work.

4. Construct two all-weather, hard surfaced parking spaces for exclusive use of authorized representatives of the City. Provide all-weather surfaced walk between parking spaces and field office.

B. Minimum Construction:

1. Structurally sound foundation and superstructure.

2. Weather tight with insulated roof, walls and 7-foot ceiling (minimum).

3. Stairs or walkway with handrail and covered entrance platform (minimum 4 feet by 4 feet) with mud scraper at door.

4. Resilient floor covering.

5. Screened windows with area equal to approximately 10 percent of floor area sufficient for light, view of the site, and ventilation. Provide each window with operable sash and burglar bars.

6. Secure exterior doors with dead-bolt cylinder locks and burglar bars.

C. Minimum Services:

1. Exterior entrance light.

2. Interior lighting of 75 foot-candles minimum at desktop height.

3. Automatic heating to maintain 65 degrees F in winter.

4. Automatic cooling to maintain 75 degrees F in summer.

5. Electric power service.

6. Three telephone service lines one for voice, one for data, and one for fax, for exclusive use of authorized representatives of the City.

7. Sanitary facilities in field office with one water closet, one lavatory, and one medicine cabinet for exclusive use of authorized representatives of the City.

D. Minimum Furnishings:

1. One 5-drawer desk

2. Two swivel desk chairs with casters.

3. One plan table.

4. One drawing plan rack.

5. One 4-drawer legal file cabinet complete with fifty legal-size hanging folders and two full-sized carriers.

6. One marker board with cleaner and markers.

7. Two waste baskets.

8. One 30-inch by 36-inch tack board.

9. One all-purpose fire extinguisher.

10. Six protective helmets (hard hats) with ratchet adjustment for exclusive use of authorized representatives of the City.

11. Conference table and chairs to accommodate 10 persons.

12. Plain paper fax machine.

13. Telephone instrument separate from fax machine.

E. Provide adequate space for one set of Contract documents for ready reference.

## PART 3 EXECUTION

### 3.01 MAINTENANCE

A. Maintain all-weather surface driveway and parking areas, buildings, walkways, stairs and required furnishings and equipment for duration of the Contract.

B. Provide janitorial services for duration of the Contract consisting of twice weekly sweeping and mopping floors, trash removal, weekly restroom cleaning, and weekly dusting of furniture and equipment.

C. Provide soap, paper towels, toilet paper, cleansers and other necessary consumables.

D. Immediately repair damage, leaks or defective service.

### 3.02 PROJECT CLOSEOUT

A. Remove temporary field office and signs and restore site as specified in Section 01770 - Closeout Procedures.

END OF SECTION

Section 01555

# TRAFFIC CONTROL AND REGULATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Requirements for signs, signals, control devices, traffic barriers, flares, lights and traffic signals; construction parking control, designated haul routes, and bridging of trenches and excavations.

B. Qualifications and requirements for use of flagmen.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Price Contracts.

1. Traffic control and regulation. Payment for traffic control and regulation is on a lump sum basis. Include preparation and submittal of traffic control plan if different than shown on Drawings, and provision of traffic control devices, equipment, and personnel necessary to protect the Work and public. Payment will be based on Contractor's Schedule of Values for traffic control and regulation.

2. Flagmen. Payment for flagmen is on a lump sum basis. Partial payments will be based on Contractor's Schedule of Values for flagmen.

3. New Portable Concrete Low Profile Traffic Barrier Provided. Payment is on a unit price basis for each linear foot of low profile traffic barrier provided, installed with hardware assemblies and connected together in accordance with the approved traffic control plan.

4. Portable Concrete Low Profile Traffic Barrier picked up from City of Houston Stockpile. Payment is on a unit price basis for each linear foot of low profile traffic barrier picked up from designated stockpile, moved onto the project, set at location and connected together.

5. Portable Concrete Low Profile Traffic Barrier Installed. Payment is on a unit price basis for each linear foot of low profile traffic barrier delivered to the project location, installed with hardware assemblies and connected together in accordance with the approved traffic control plan.

6. Portable Concrete Low Profile Traffic Barrier Moved and Reset. Payment is on a unit price basis for each linear foot of low profile traffic barrier disassembled, moved on the project, reset at the new locations and connected together. Include cost to repair roadway in the unit price.

7. Portable Concrete Low Profile Traffic Barrier Removed. Payment is on a unit price basis for each linear foot of low profile traffic barrier removed from the project, including hardware assemblies, and stockpiling at location listed in Section 01110 – Summary of Work. Include cost to repair roadway in the unit price.

8. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price Contracts. Include payment for work under this section in the total Stipulated Price.

1.03 REFERENCES

A. Texas Manual on Uniform Traffic Control Devices (TMUTCD)

B. Article 4413 (29bb), commonly referred to as Private Investigators and Private Security Agencies Act, and Article 2.12, Texas Code of Criminal Procedure.

C. Code of Ordinances, City of Houston, Texas.

1. Chapter 10 Buildings And Neighborhood Protection, Article X Cleanup After Demolition Or Removal Of Structures

2. Chapter 40 Streets and Sidewalks, Article XVII Pedestrian Way Impairments

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Traffic control plan:

1. If using traffic control plan contained in the Contract without modification, submit a letter confirming use of the plan.

2. If using a different traffic control plan, submit the plan for approval. The plan must conform to TMUTCD requirements and be sealed by a Registered Texas Professional Engineer.

C. Submit copies of approved lane closure permits issued by City Traffic Engineering Branch.

D. Submit Schedules of Values for traffic control plan and flagmen within 30 days following Notice to Proceed.

E. Submit records verifying qualifications of Uniformed Peace Officers and Certified Flagmen proposed for use on the Work.

F. When working in the central business district, submit copies of approved Pedestrian Way permits issued by the City's Traffic Engineering Branch.

1.05 FLAGMEN

A. Use Uniformed Peace Officers and Certified Flagmen to control movement of vehicular and pedestrian traffic when construction operations encroach on public traffic lanes.

B. Uniformed Peace Officer: Individual employed full-time as a peace officer who receives separate compensation as a privately employed flagman. Private employment may be an employee-employer relationship or on an individual basis. Flagman may not be in the employ of another peace officer nor be a reserve peace officer.

1. Uniformed Peace Officers may be:
   a. sheriffs and their deputies;
   b. constables and deputy constables;
   c. marshals or police officers of an incorporated city, town or village; or
   d. as otherwise provided by Article 2.12, Code of Criminal Procedure.

2. The Uniformed Peace Officer must be a full-time peace officer, must work a minimum average of 32 paid hours per week, and must be paid a rate not less than the prevailing minimum hourly wage rate set by the federal Wage and Hour Act. The individual must be entitled to vacation, holidays, and insurance and retirement benefits.

C. Certified Flagman: Individual who receives compensation as a flagman and meets the following qualifications:

1. Formally trained and certified in traffic control procedures by the City's E. B. Cape Center.

2. Speaks English. Ability to speak Spanish is desirable but not required.

3. Paid for flagman duty at an hourly rate not less than the wage rate set for Rough Carpenter under the City's Wage Scale for Engineering Construction.

D. Certified Flagmen must wear a distinctive uniform, bright-colored vest, and be equipped with appropriate flagging and communication devices while at the Work site. They must also have in their possession while on duty, a proof of training identification card issued by the appropriate training institute.

## PART 2 PRODUCTS

### 2.01 SIGNS, SIGNALS, AND DEVICES

A. Comply with TMUTCD requirements.

B. Traffic cones and drums, flares and lights: Conform to local jurisdictions' requirements.

C. When working in the Central business district, provide pedestrian pathway signage approved by the City's Traffic Engineering Branch.

### 2.02 PORTABLE LOW PROFILE CONCRETE BARRIERS

A. The low profile concrete barrier is a patented design. Information concerning this barrier may be obtained from Texas Transportation Institute, Texas A&M University System, College Station, Texas 77843-3135, (409) 845-1712.

## PART 3 EXECUTION

### 3.01 PUBLIC ROADS

A. Submit requests forms for lane closure and sidewalk closure to the City's Traffic Engineering Branch at least three working days prior to need for blocking vehicular lanes or sidewalks. Do not block lanes or sidewalks without approved permits. Obtain application from the City's Traffic Engineering Branch at 611 Walker, 5th floor or at the following internet address: http://www.ci.houston.tx.us/pwe/mrow/laneclosure.htm.

B. Follow laws and regulations of governing jurisdictions when using public roads. Pay for and obtain permits from jurisdiction before impeding traffic or closing lanes. Coordinate activities with Project Manager.

C. Give Project Manager one-week notice before implementing approved traffic control phases. Inform local businesses of impending traffic control activities.

D. Notify police department, fire department, METRO, and local schools, churches, and businesses in writing a minimum of five business days prior to beginning work.

E. Maintain 10-foot-wide all-weather lanes adjacent to the Work for emergency vehicle use. Keep all-weather lanes free of construction equipment and debris.

F. Do not to obstruct normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by Project Manager.

G. Maintain local driveway access to residential and commercial properties adjacent to work areas at all times. Use all-weather materials approved by Project Manager to maintain temporary driveway access to commercial and residential driveways.

H. Keep streets entering and leaving job site free of excavated material, debris, and foreign material resulting from construction operations in compliance with applicable ordinances.

I. Remove existing signage and striping that conflict with construction activities or that may cause driver confusion.

J. Provide safe access for pedestrians along major cross streets.

K. Alternate closures of cross streets so that two adjacent cross streets are not closed simultaneously.

L. Do not close more than two consecutive esplanade openings at a time without prior approval from Project Manager.

3.02 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and the City's operations.

B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.

C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.03 FLARES AND LIGHTS

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

3.04 HAUL ROUTES

A. Utilize haul routes designated by authorities or shown on Drawings for construction traffic.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

3.05 TRAFFIC SIGNS AND SIGNALS

A. Construct necessary traffic control devices for temporary signals required to complete the Work including loop detectors, traffic signal conduits, traffic signal wiring and crosswalk signals. Notify the City's Traffic Engineering Branch a minimum of 60 days in advance of need for control boxes and switchgear. The City will perform necessary service, programming or adjustments, to signal boxes and switchgear if required during construction.

B. Install and operate traffic control signals to direct and maintain orderly traffic flow in areas under Contractor's control affected by Contractor's operations. Post notices, signs and traffic controls before moving into next phase of traffic control.

C. Relocate traffic signs and signals as the Work progresses to maintain effective traffic control.

D. Unless otherwise approved by Project Manager, provide driveway signs with name of business that can be accessed from each crossover. Use two signs for each crossover.

E. Replace existing traffic control devices in Project area.

F. Project Manager may direct Contractor to make minor adjustments to traffic control signage to eliminate driver confusion and maintain orderly traffic flow during construction at no additional cost to the City.

3.06 BRIDGING TRENCHES AND EXCAVATIONS

A. When necessary, construct bridges over trenches and excavation to permit an unobstructed flow of traffic across construction areas and major drives.

Use steel plates of sufficient thickness to support H-20 loading and install to operate with minimum noise.

B. Shore trench or excavation to support bridge and traffic.

C. Secure bridging against displacement with adjustable cleats, angles, bolts or other devices when:

1. bridging is placed over existing bus routes,

2. more than five percent of daily traffic is comprised of commercial or truck traffic,

3. more than two separate plates are used for bridging, and

4. when bridge is to be used for more than five consecutive days.

D. Extend steel plates used for bridging a minimum of 1 foot beyond edges of trench or excavation. Use temporary paving materials such as premix to feather edges of plates to minimize wheel impact on secured bridging.

3.07 REMOVAL

A. Remove equipment and devices when no longer required.

B. Repair damage caused by installation.

C. Remove post settings to a depth of 2 feet.

3.08 TRAFFIC CONTROL, REGULATION AND DIRECTION

A. Use Flagmen to control, regulate and direct an even flow and movement of vehicular and pedestrian traffic, for periods of time as may be required to provide for public safety and convenience, where:

1. multi-lane vehicular traffic must be diverted into single lane vehicular traffic,

2. vehicular traffic must change lanes abruptly,

3. construction equipment must enter or cross vehicular traffic lanes and walks,

4. construction equipment may intermittently encroach on vehicular traffic lanes and unprotected walks and crosswalks,

5. traffic regulation is needed due to rerouting of vehicular traffic around the Work site, and

6. where construction activities might affect public safety and convenience.

B. Use of Flagmen to assist in the regulation of traffic flow and movement does not relieve Contractor of responsibility to take other means necessary to protect the Work and public.

3.09 INSTALLATION STANDARDS

A. Place temporary pavement for single lane closures, in accordance with TMUTCD.

B. Reinstall temporary and permanent pavement markings as approved by Project Manager. When weather conditions do not allow application according to manufacturer's requirements, alternate markings may be considered. Submit proposed alternate to Project Manager for approval prior to installation. No additional payment will be made for use of alternate markings.

3.10 MAINTENANCE OF EQUIPMENT AND MATERIAL

A. Submit name, address and telephone number of individual designated to be responsible for maintenance of traffic handling at construction site to Project Manager. Individual must be accessible at all times to immediately correct deficiencies in equipment and materials used to handle traffic including missing, damaged, or obscured signs, drums, barricades, or pavement markings.

B. Inspect signs, barricades, drums, lamps and temporary pavement markings daily to verify that they are visible, in good working order, and conform with traffic handling plans as approved by Project Manager. Immediately repair, clean, relocate, realign, or replace equipment or materials that are not in compliance.

C. Keep equipment and materials, signs and pavement markings, clean and free of dust, dirt, grime, oil, mud, or debris.

D. Obtain approval of Project Manager to reuse damaged or vandalized signs, drums, and barricades.

END OF SECTION

SUPPLEMENTARY SPECIFICATION

Section 01562 (S)

TREE AND PLANT PROTECTION

**The following supplemental modifies Specification Section 01562. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.**

Delete Paragraph 1.02, replace and renumber accordingly: (MEASUREMENT AND PAYMENT)

A. Payment for Tree and Plant Protection will be Incidental to sidewalk construction including all items noted in this section unless specified otherwise.

B. City will Provide and Coordinate with Qualified Arborist regarding Tree Protection issues.

C. Payment for tree removal is on unit price basis for each tree diameter 8-inches or larger to be removed, as specified by project drawings, or as directed by Project Manager. Tree with less than 8-inch diameter are incidental to sidewalk placement.

D. Payment for Branch and/or Root Pruning is on unit price for each tree pruned, where specified by project drawings, or as directed by Project Manager.

E. Payment for Checker Plate is on a square foot basis as per checker plate detail, where specified by project drawings, or as directed by Project Manager.

END OF SUPPLEMENT

Approved by:

Mohammad Sabzevari, P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

10-20-14
Date

Section 01562

# TREE AND PLANT PROTECTION

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Tree and plant protection and maintenance.

B. Planting new trees and relocating and replanting existing trees.

C. Maintenance of planted or replanted trees.

### 1.02 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit name and experience of qualified Arborist, proposed for use on the Work, to Project Manager.

### 1.03 PROJECT CONDITIONS

A. Preserve and protect existing trees and plants, that are to remain; from damage to foliage, branches, trunk, or roots; that could result from construction operations.

B. Do not remove any Tree unless Parks and Recreation Department grants written permission for removal. Chapter 33, Article VI of the City of Houston Code of Ordinances (the "Code") defines Tree.

C. Prevent following types of damage:

1. Compaction of root zone by foot, vehicular traffic, or material storage.

2. Trunk damage from equipment operations, material storage, or from nailing or bolting.

3. Trunk and branch damage caused by ropes or guy wires.

4. Root poisoning from spilled solvents, gasoline, paint, and other noxious materials.

5. Branch damage due to improper pruning or trimming.

6. Damage from lack of water due to:

a. Cutting or altering natural water migration patterns near root zones
b. Failure to provide adequate watering

7. Damage from alteration of soil pH factor caused by depositing lime, concrete, plaster, or other base materials near roots

8. Cutting of roots larger than 1-1/2 inches in diameter

1.04 DAMAGE ASSESSMENT

A. When a Tree, defined by the Code, other than those permitted for removal, are destroyed or badly damaged as result of construction operations, remove and replace with same size, species, and variety. Replace trees larger than 8 inches in diameter with 8-inch diameter tree of same species and variety.

B. Contract Price shall be reduced by the amount determined by Parks and Recreation Department using the formula in the Code.

PART 2 PRODUCTS

2.01 MATERIALS

A. Asphalt Paint: Emulsified asphalt or other adhesive, elastic, antiseptic coating formulated for horticultural use on cut or injured plant tissue, free from kerosene and coal creosote.

B. Burlap: Suitable for use as tree wrapping.

C. Fertilizer: Liquid containing 20 percent nitrogen, 10 percent phosphorus, and 5 percent potash.

D. Obtain Project Manager approval of replacement trees.

PART 3 EXECUTION

3.01 PROTECTION AND MAINTENANCE OF EXISTING TREES AND SHRUBS

A. Trees within Project area, except for trees shown on Drawings or directed by Project Manager to be removed and relocated, are to remain in place. Protect from damage and maintain trees that are to remain.

B. Perform the following for trees or shrubs that are to remain:

1. Trim trees and shrubs under supervision of a professional tree surgeon or horticulturist.
   a. Prune trees according to International Society of Arbor culture specifications.
   b. Prune trees and shrubs requiring pruning for construction operations for balance and to maintain proper form and branching habit.
   c. Cut limbs at branch collar and remove stubs. Do not gouge outer layer of tree structure or trunk.
   d. Prior to construction, prune all trees to remain of new or recent growth to maintain basic branching form of trees. Base extent of pruning upon proximity of pavement to trunk and size of tree blockouts and requirements of construction adjacent to tree.
   e. Limit pruning of young branches to the maximum extent possible. Maintain older branches that provide basic form of tree. Prune in the presence of Project Manager.
   f. Paint exposed, living tissue of cuts over 3/4" in diameter with tree paint.

2. Use extreme care to prevent excessive damage to root systems.
   a. Cut tree roots in construction area smoothly with a trencher before excavating. Do not allow ripping of roots with backhoes or other equipment.
   b. Temporarily cover exposed roots with wet burlap to prevent roots from drying out.
   c. Cover exposed roots with soil as soon as possible.

3. Prevent damage or compaction of root zone (area below drip line) by construction activities.
   a. Do not allow equipment to scar trunks or limbs
   b. Do not store construction materials, vehicles, or excavated material under drip line of trees.
   c. Do not pour liquid materials under drip line.

4. Water and fertilize remaining trees and shrubs to maintain their health during construction period.
   a. Water landscaping during construction operations at least once every seven days in cold months and once every four days in hotter months.
   b. Saturate soils to at least 6 to 8 inches beneath surface.

5. Water areas currently being served by private sprinkler systems while systems are temporarily taken out of service to maintain health of existing landscapes.

6. With Project Manager's permission, shrubs to remain may be temporarily transplanted and returned to original positions under supervision of professional horticulturist.

3.02 PROTECTION

A. Protection of Trees or Shrubs in Open Area:

1. Install steel drive-in fence posts in protective circle, approximately 8 feet on center, not closer than 4 feet to trunk of trees or stems of shrubs.

2. Insert steel drive-in fence posts a minimum of 3 feet into ground, leaving a minimum of 5 feet above ground.

3. Mount fluorescent orange construction fence on fence posts.

4. For trees or shrubs in paved areas, use movable posts consisting of two 1/2-inch minimum diameter concrete-filled steel pipe mounted in rubber automobile tires filled with concrete.

B. Provide timber wrap protection for trees in close proximity to equipment when work is required within construction fencing.

1. Wrap trunk with a layer of burlap.

2. Install vertical 5 to 6 foot long 2 by 4's or 2 by 5's, spaced 3 to 5 inches apart, around circumference of tree trunk.

3. Tie burlap in place with 12 to 9 gauge steel wire.

3.03 RELOCATING AND PLANTING NEW TREES

A. Employ a qualified Arborist, acceptable to Project Manager, to plant and to move and relocate trees. Arborist must be normally engaged in the field and have a minimum of five years experience.

3.04 MAINTENANCE OF NEWLY PLANTED TREES AND REPLANTED TREES

A. Provide proof of capability to water trees during dry periods.

B. Maintain newly planted trees, in healthy condition until end of one-year warranty and Surface Restoration Bond periods.

1. Straighten leaning trees.

2. Replace dead trees or trees that, in the opinion of Project Manager, have become unhealthy, unsightly or have lost their natural shape as result of additional growth, improper pruning, maintenance or weather conditions, within four weeks of notice from Project Manager.

3. When a tree must be replaced, a new warranty period shall commence on date of tree replacement, and Project Manager's approval. Minimum warranty period shall be one year.

4. Dispose of rejected trees.

END OF SECTION

Section 01570

# STORM WATER POLLUTION CONTROL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Implementation of Storm Water Pollution Prevention Plans (SWP3) described in Section 01410 – TPDES Requirement.

B. Installation and maintenance of storm-water pollution prevention structures: diversion dikes, interceptor dikes, diversion swales, interceptor swales, down spout extenders, pipe slope drains, paved flumes and level spreaders. Structures are used during construction and prior to final development of the site.

C. Filter Fabric Fences:

1. Type 1: Temporary filter fabric fences for erosion and sediment control in non-channelized flow areas.

2. Type 2: Temporary reinforced filter fabric fences for erosion and sediment control in channelized flow areas.

D. Straw Bale Fence.

### 1.02 MEASUREMENT AND PAYMENT

A. UNIT PRICES

1. Payment for filter fabric fence is on a linear foot basis measured between limits of beginning and ending of stakes.

2. Payment for reinforced filter fabric fence is on a linear foot basis measured between limits of beginning and ending of stakes.

3. Payment for drop inlet baskets is on a unit price basis for each drop inlet basket.

4. Payment for storm inlet sediment traps is on a unit price basis for each storm inlet sediment trap.

5. Payment for storm-water-pollution-prevention structures is on a lump sum basis for the project. Earthen structures with outlet and piping includes diversion dikes, interceptor dikes, diversion swales, interceptor swales, and excavated earth-outlet sediment trap,

embankment earth-outlet sediment trap, down spout extenders, pipe slope drains, paved flumes, stone outlet sediment trap, and level spreaders.

6. Payment for straw bale barrier, if included in Document 00410 - Bid Form, is on a linear foot of accepted bale barriers, if not include in cost of storm-water-pollution-prevention structures.

7. Payment for brush berm, if included in Document 00410 - Bid Form, is on a linear foot of accepted brush berm, if not include in cost of storm-water-pollution-prevention structures.

8. Payment for sandbag barrier, if included in Document 00410 - Bid Form, is on a linear foot basis measured between limits of beginning and ending of sandbags, if not include in cost of storm-water-pollution-prevention structures.

9. Payment for sediment basin with pipe outlet or stone outlet, if included in Document 00410 - Bid Form, is on a square yard basis, if not include in cost of storm-water-pollution-prevention structures.

10. Payment for inlet protection barriers, if included in Document 00410 - Bid Form, is on a linear foot basis measured along outside face of inlet protection barrier, if not include in cost of storm-water-pollution-prevention structures.

11. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum) Contract. If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCE STANDARDS

A. ASTM

1. A 36 - Standard Specification for Carbon Structural Steel.

2. D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

3. D3786 - Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Nonwoven Fabrics.

4. D 4355 - Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).

5. D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

6. D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

7. D 4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

8. D 6382 - Standard Practice for Dynamic Mechanical Analysis and Thermogravimetry of Roofing and Waterproofing Membrane Material.

B. Storm Water Management Handbook for Construction Activities prepared by City of Houston, Harris County and Harris County Flood Control District.

1.04 SYSTEM DESCRIPTIONS

A. Filter Fabric Fence Type 1 and Type 2: Install to allow surface or channel runoff percolation through fabric in sheet-flow manner and to retain and accumulate sediment. Maintain Filter Fabric Fences to remain in proper position and configuration at all times.

B. Straw Bale Fence: Install to allow surface runoff percolation through straw in sheet-flow manner and to retain and accumulate sediment. Maintain Straw Bale Fence to remain in proper position and configuration at all times.

C. Interceptor Dikes and Swales: Construct to direct surface or channel runoff around the project area or runoff from project area into sediment traps.

D. Drop Inlet Baskets: Install to allow runoff percolation through the basket and to retain and accumulate sediment. Clean accumulation of sediment to prevent clogging and backups.

E. Sediment traps: Construct to pool surface runoff from construction area to allow sediment to settle onto the bottom of trap.

1.05 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturer's literature for product specifications and installation instructions.

C. Submit manufacturer's catalog sheets and other product data on geotextile or filter fabrics, outlet pipe, perforated riser and connectors.

D. Submit proposed methods, equipment, materials, and sequence of operations for storm-water pollution prevention structures.

E. Submit shop drawings for Drop Inlet Baskets.

## PART 2 PRODUCTS

### 2.01 CONCRETE

A. Concrete: Class B in accordance with Section 03315 – Concrete for Utility Construction or as shown on the Drawings.

### 2.02 AGREGATE MATERIALS

A. Use poorly graded cobbles with diameter greater than 3 inches and less than 5 inches.

B. Provide gravel lining in accordance with Section 2320 – Utility Backfill Materials or as shown on the drawings.

C. Provide clean cobbles and gravel consisting of crushed concrete or stone. Use clean, hard crushed concrete or stone free from adherent coatings, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic matter.

D. Sediment Pump Pit Aggregate: Use nominal 2-inch diameter river gravel.

### 2.03 PIPE

A. Polyethylene culvert pipe or PVC sewer pipe in accordance with Section 02505- High Density Polyethylene (HDPE) Solid and Profile Wall Pipe and Section 02506 Polyvinyl Chloride Pipe or as shown on the Drawings.

B. Inlet Pipes: Galvanized steel pipe in accordance with Section 02642 Corrugated Metal Pipe or as shown on the Drawings.

C. Standpipe for Sediment Pump Pits: Galvanized round culvert pipe or round PVC pipe, minimum of 12-inch and a maximum of 24-inch diameter, perforate at 6 to 12 inch centers around circumference.

2.04 GEOTEXTILE FILTER FABRIC

A. Woven or nonwoven geotextile filter fabric made of either polypropylene, polyethylene, ethylene, or polyamide material, in continuous rolls of longest practical length.

B. Grab Strength: 100 psi in any principal direction (ASTM D-4632), Mullen burst strength >200 psi (ASTM D-3786), and equivalent opening size between 50 and 140.

C. Furnish ultraviolet inhibitors and stabilizers for minimum 6 months of expected usable construction life at temperature range of 0 degrees F to 120 degrees F.

D. Mirafi, Inc., Synthetic Industries, or equivalent

2.05 FENCING

A. Wire Fencing: Woven galvanized steel wire, 14 gauge by 6-inch square mesh spacing, minimum 24 inch roll or sheet width of longest practical length.

B. Fence Stakes: Nominal 2 by 2 inch moisture-resistant treated wood or steel posts (min. of 1.25 lbs. per linear foot and Brinell Hardness greater than 140) with safety caps on top; length as required for minimum 8 inch bury and full height of filter fabric.

2.06 SANDBAGS

A. Provide woven material made of polypropylene, polyethylene, or polyamide material.

1. Minimum unit weight of four ounces per square yard.

2. Minimum grab strength of 100 psi in any principal direction (ASTM D4632)

3. Mullen burst strength exceeding 300 psi (ASTM D3786).

4. Ultraviolet stability exceeding 70 percent.

5. Size: Length:18 to 24 inches. Width: 12 to 18 inches. Thickness: 6 to 8 inches. Weight: 50 to 125 pounds.

2.07 DROP INLET BASKET

A. Provide steel frame members in accordance with ASTM A36.

B. Construct top frame of basket with two short sides of 2 inch by 2 inch and single long side of 1 inch by 1 inch, 1/8 inch angle iron. Construct basket hangers of 2 inch by 1/4 inch iron bars. Construct bottom frame of 1 inch by 1/4 inch iron bar or 1/4 inch plate with center 3 inches removed. Use minimum 1/4 inch diameter iron rods or equivalent for sides of inlet basket. Weld minimum of 14 rods in place between top frame/basket hanger and bottom frame. Exact dimensions for top frame and insert basket will be determined based on dimensions of type of inlet being protected.

2.08 STRAW BALE

A. Straw: Standard-baled agricultural hay bound by wire, nylon, or polypropylene rope. Do not use jute or cotton binding.

B. Straw Bale Stakes (applicable where bales are on soil): No. 3 (3/8 diameter) reinforcing bars, deformed or smooth at Contractor's option, length as required for minimum 18 inch bury and full height bales.

PART 3 E X E C U T I O N

3.01 PREPARATION, INSTALLATION AND MAINTAINANCE

A. Provide erosion and sediment control structures at locations shown on the Drawings.

B. Do not clear, grub or rough cut until erosion and sediment control systems are in place unless approved by Project Manger to allow installation of erosion and sediment control systems, soil testing and surveying.

C. Maintain existing erosion and sediment control systems located within project site until acceptance of Project or until directed by Project Manger to remove and discard existing system.

D. Regularly inspect and repair or replace damaged components of erosion and sediment control structures. Unless otherwise directed, maintain erosion and sediment control structure until project area stabilization is accepted. . Redress and replace granular fill at outlets as needed to replenish depleted granular fill. Remove erosion and sediment control structures promptly when directed by Project Manger. Dispose of materials in accordance with Section 01576 - Waste Material Disposal.

E. Remove and dispose sediment deposits at the designated spoil site for the Project. If a project spoil site is not designated on Drawings, dispose of sediment off site at approved location in accordance with Section 01576 - Waste Material Disposal.

F. Unless otherwise shown on the Drawings, compact embankments, excavations, and trenches in accordance with Section 02315 Roadway Excavation or Section 2317 Excavation and Backfill for Utilities.

G. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated right of way and easements for construction. Immediately repair damage caused by construction traffic to erosion and sediment control structures.

H. Protect existing trees and plants in accordance with Section 1562 – Tree and Plant Protection.

3.02 SEDIMENT TRAPS

A. Install sediment traps so that surface runoff shall percolate through system in sheet flow fashion and allow retention and accumulation of sediment.

B. Inspect sediment traps after each rainfall, daily during periods of prolonged rainfall, and at a minimum once each week. Repair or replace damaged sections immediately.

C. Use fill material for embankment in accordance with Section 02320 – Utility Backfill Materials.

D. Excavation length and height shall be as specified on Drawings. Use side slopes of 2:1 or flatter.

E. Stone outlet sediment traps:

1. Maintain minimum of 6 inches between top of core material and top of stone outlet, minimum of 4 inches between bottom of core material and existing ground and minimum of 1 foot between top of stone outlet and top of embankment.

2. Embed cobbles minimum of 4 inches into existing ground for stone outlet. Core shall be minimum of 1 foot in height and in width and wrapped in triple layer of geotextile filter fabric.

F. Sediment Basin with Pipe Outlet Construction Methods: Install outlet pipe and riser as shown on the Drawings.

G. Remove sediment deposits when design basin volume is reduced by one-third or sediment level is one foot below principal spillway crest, whichever is less.

3.03 FILTER FABRIC FENCE CONSTRUCTION METHODS

A. Fence Type 1:

1. Install stakes 3 feet on center maximum and firmly embed minimum 8 inches in soil. If filter fabric is factory preassembled with support netting, then maximum support spacing is 8 feet. Install wood stakes at a slight angle toward the source of anticipated runoff.

2. Trench in the toe of the fence lines so the downward face of the trenches is flat and perpendicular to direction of flow. V-trench configuration as shown on Drawings may also be used.

3. Lay fabric along edges of trenches in longest practical continuous runs to minimize joints. Make joints only at a support post. Splice with minimum 6-inch overlap and seal securely.

4. Staple filter fabric to stakes at maximum 3 inches on center. Extend fabric minimum 18 inches and maximum 36 inches above natural ground.

5. Backfill and compact trench.

B. Fence Type 2:

1. Layout fence same as for Type 1.

2. Install stakes at 6 feet on center maximum and at each joint in wire fence, firmly embedded 1-foot minimum, and inclined it as for Type 1.

3. Tie wire fence to stakes with wire at 6 inches on center maximum. Overlap joints minimum one bay of mesh.

4. Install trench same as for Type 1.

5. Fasten filter fabric wire fence with tie wires at 3 inches on center maximum.

6. Layout fabric same as for Type 1. Fasten to wire fence with wire ties at 3 inches on center maximum and, if applicable, to stakes above top of wire fence it as for Type 1.

7. Backfill and compact trench.

C. Attach filter fabric to wooden fence stakes spaced a maximum of 6 feet apart or steel fence stakes spaced a maximum of 8 feet apart and embedded a minimum of 12 inches. Install stakes at a slight angle toward source of anticipated runoff.

D. Trench in toe of filter fabric fence with spade or mechanical trencher so that downward face of trench is flat and perpendicular to direction of flow. A

V-trench configuration may also be used. Lay filter fabric along edges of trench. Backfill and compact trench upon completion of Construction.

E. Filter fabric fence shall have a minimum height of 18 inches and a maximum height of 36 inches above natural ground.

F. Cut length of fence to minimize use of joints. When joints are necessary, splice fabric together only at support post with minimum 6 inch overlap and seal securely.

G. Triangular Filter Fabric Fence Construction Methods

1. Attach filter fabric to wire fencing, 18 inches on each side. Provide a fabric cover and skirt with continuous wrapping of fabric. Skirt should form continuous extension of fabric on upstream side of fence.

2. Secure triangular fabric filter fence in place using one of the following methods:
   a. Toe-in skirt 6 inches with mechanically compacted material;
   b. Weight down skirt with continuous layer of 3-inch to 5-inch graded rock; or
   c. Trench-in entire structure 4 inches.

3. Anchor triangular fabric filter fence structure and skirt securely in place using 6-inch wire staples on 2-foot centers on both edges and on skirt, or staked using 18-inch by 3/8-inch diameter re-bar with tee ends.

4. Lap fabric filter material by 6 inches to cover segment joints. Fasten joints with galvanized shoat rings.

H. Reinforced Filter Fabric Barrier Construction Methods

1. Attach woven wire fence to fence stakes.

2. Securely fasten filter fabric material to wire fence with tie wires.

3. When used in swales, ditches or diversions, elevation of barrier at top of filter fabric at flow line location in channel shall be lower than bottom elevation of filter fabric at ends of barrier or top of bank, whichever is less, in order to keep storm water discharge in channel from overtopping bank.

4. Remove sediment deposits when silt reaches depth one-third height of barrier or 6 inches, whichever is less.

3.04 DIKE AND SWALE

A. Unless otherwise indicated, maintain minimum dike height of 18 inches, measured from cleared ground at up slope toe to top of dike. Maintain side slopes of 2:1 or flatter.

B. Dike and Swale Stabilization: When shown on the Drawings, place gravel lining 3 inches thick and compacted into the soil or 6 inches thick if truck crossing is expected. Extend gravel lining across bottom and up both sides of swale minimum height of 8 inches vertically, above bottom. Gravel lining on dike side shall extend up the up slope side of dike a minimum height of 8 inches, measured vertically from interface of existing or graded ground and up slope toe of dike, as shown on Drawings.

C. Divert flow from dikes and swales to sediment basins, stabilized outlets, or sediment trapping devices of types and at locations shown on Drawings. Grade dikes and swales as shown on Drawings, or, if not specified, provide positive drainage with maximum grade of 1 percent to outlet or basin.

D. Clear in accordance with Section 2233 – Clearing and Grubbing Compact embankments in accordance with Section 2315 – Roadway Excavation.

E. Carry out excavation for swale construction so that erosion and water pollution is minimal. Minimum depth shall be 1 foot and bottom width shall be 4 feet, with level swale bottom. Excavation slopes shall be 2:1 or flatter. Clear, grub and strip excavation area of vegetation and root material.

3.05 DOWN SPOUT EXTENDER

A. Down spout extender shall have slope of approximately 1 percent. Use pipe diameter of 4 inches or as shown on the Drawings. Place pipe in accordance with Section 2317 - Bedding and Backfill for Utilities.

3.06 PIPE SLOPE DRAIN

A. Compact soil around and under drain entrance section to top of embankment in lifts appropriately sized for method of compaction utilized.

B. Inlet pipe shall have slope of 1 percent or greater. Use pipe diameter as shown on the Drawings.

C. Top of embankment over inlet pipe and embankments directing water to pipe shall be at least 1 foot higher at all points than top of inlet pipe.

D. Pipe shall be secured with hold-down grommets spaced 10 feet on centers.

E. Place riprap apron with a depth equal to pipe diameter with 2:1 side slopes.

3.07 PAVED FLUME

A. Compact soil around and under the entrance section to top of the embankment in lifts appropriately sized for method of compaction utilized.

B. Construct subgrade to required elevations. Remove and replace soft sections and unsuitable material. Compact subgrade thoroughly and shape to a smooth, uniform surface.

C. Construct permanent paved flumes in accordance with Drawings.

D. Remove sediment from riprap apron when sediment has accumulated to depth of one foot.

3.08 LEVEL SPREADER

A. Construct level spreader on undisturbed soil and not on fill. Ensure that spreader lip is level for uniform spreading of storm runoff.

B. Maintain at required depth, grade, and cross section as specified on Drawings. Remove sediment deposits as well as projections or other irregularities which will impede normal flow.

3.09 INLET PROTECTION BARRIER

A. Place sandbags and filter fabric fences at locations shown on the SWP3.

3.10 DROP INLET BASKET CONSTRUCTION METHODS

A. Fit inlet insert basket into inlet without gaps around insert at locations shown on the SWP3.

B. Support for inlet insert basket shall consist of fabricated metal as shown on Drawings.

C. Push down and form filter fabric to shape of basket. Use sheet of fabric large enough to be supported by basket frame when holding sediment and extend at least 6 inches past frame. Place inlet grates over basket/frame to serve as fabric anchor.

D. Remove sediment deposit after each storm event and whenever accumulation exceeds 1-inch depth during weekly inspections.

3.11 STRAW BALE FENCE CONSTRUCTION METHODS

A. Place bales in row with ends tightly abutting adjacent bales. Place bales with bindings parallel to ground surface.

B. Embed bale in soil a minimum of 4 inches.

C. Securely anchor bales in place with Straw Bale Stakes driven through bales a minimum of 18-inches into ground. Angle first stake in each bale toward previously laid bale to force bales together.

D. Fill gaps between bales with straw to prevent water from channeling between bales. Wedge carefully in order not to separate bales.

E. Replace with new straw bale fence every two months or as required by Project Manager.

3.12 BRUSH BERM CONSTRUCTION METHODS

A. Construct brush berm along contour lines by hand placing method. Do not use machine placement of brush berm.

B. Use woody brush and branches having diameter less than 2-inches with 6-inches overlap. Avoid incorporation of annual weeds and soil into brush berm.

C. Use minimum height of 18-inches measured from top of existing ground at upslope toe to top of berm. Top width shall be 24 inches minimum and side slopes shall be 2:1 or flatter.

D. Embed brush berm into soil a minimum of 4-inches and anchor using wire, nylon or polypropylene rope across berm with a minimum tension of 50 pounds. Tie rope securely to 18-inch x 3/8-inch diameter rebar stakes driven into ground on 4-foot centers on both sides of berm.

3.13 STREET AND SIDEWALK CLEANING

A. Keep areas clean of construction debris and mud carried by construction vehicles and equipment. If necessary, install stabilized construction exits at construction, staging, storage, and disposal areas, following Section 01575-Stabilized Construction Exit.

B. In lieu of or in addition to stabilized construction exits, shovel or sweep pavements as required to keep areas clean. Do not waterhose or sweep debris and mud off street into adjacent areas, except, hose sidewalks during off-peak hours, after sweeping.

3.14 WASTE COLLECTION AREAS

A. Prevent water runoff from passing through waste collection areas, and prevent water runoff from waste collection areas migrating outside collection areas.

3.15 EQUIPMENT MAINTENANCE AND REPAIR

A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose, so fuels, lubricants, solvents, and other potential pollutants are not washed directly into receiving streams or storm water conveyance systems. Provide these areas with adequate waste disposal receptacles for liquid and solid waste. Clean and inspect maintenance areas daily.

B. Where designated equipment maintenance areas are not feasible, take precautions during each individual repair or maintenance operation to prevent potential pollutants from washing into streams or conveyance systems. Provide temporary waste disposal receptacles.

3.16 VEHICLE/ EQUIPMENT WASHING AREAS

A. Install wash area (stabilized with coarse aggregate) adjacent to stabilized construction exit(s), as required to prevent mud and dirt run-off. Release wash water into drainage swales or inlets protected by erosion and sediment controls. Build wash areas following Section 01575- Stabilized Construction Exit. Install gravel or rock base beneath wash areas.

B. Wash vehicles only at designated wash areas. Do not wash vehicles such as concrete delivery trucks or dump trucks and other construction equipment at locations where runoff flows directly into watercourses or storm water conveyance systems.

C. Locate wash areas to spread out and evaporate or infiltrate wash water directly into ground, or collect runoff in temporary holding or seepage basins.

3.17 WATER RUNOFF AND EROSION CONTROL

A. Control surface water, runoff, subsurface water, and water from excavations and structures to prevent damage to the Work, the site, or adjoining properties.

B. Control fill, grading and ditching to direct water away from excavations, pits, tunnels, and other construction areas, and to direct drainage to proper runoff courses to prevent erosion, sedimentation or damage.

C. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

D. Dispose of drainage water to prevent flooding, erosion, or other damage to the site or adjoining areas. Follow environmental requirements.

E. Retain existing drainage patterns external to the site by constructing temporary earth berms, sedimentation basins, retaining areas, and temporary ground cover as required to control conditions.

F. Plan and execute construction and earth work to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.

1. Hold area of bare soil exposed at one time to a minimum.

2. Provide temporary controls such as berms, dikes, and drains.

G. Construct fill and waste areas by selective placement to eliminate surface silts or clays which will erode.

H. Inspect earthwork periodically to detect start of erosion. Immediately apply corrective measures as required to control erosion.

I. Dispose of sediments offsite, not in or adjacent to streams or floodplains, nor allow sediments to flush into streams or drainage ways. Assume responsibility for offsite disposal location.

J. Unless otherwise indicated, compact embankments, excavations, and trenches by mechanically blading, tamping, and rolling soil in maximum of 8-inch layers. Provide compaction density at minimum 90 percent Standard Proctor ASTM D-698-78 density. Make at least one test per 500 cubic yards of embankment.

K. Do not maneuver vehicles on areas outside of dedicated rights-of-way and easements for construction. Immediately repair damage to erosion and sedimentation control systems caused by construction traffic.

L. Do not damage existing trees intended to remain.

3.18 REMOVAL OF CONTROLS

A. Remove erosion and sediment controls when the site is finally stabilized or as directed by Project Manager.

B. Dispose of sediments and waste products following Section 01505-Temporary Facilities.

END OF SECTION

Section 01575

# STABILIZED CONSTRUCTION ACCESS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Installation and removal of erosion and sediment control for stabilized construction access used during construction and prior to final development of site, as shown in City of Houston Standard Construction details, DWG No. 01571-01.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Price Contracts. If Contract is Unit Price Contract, payment for work in this Section will be based on the following:

1. Stabilized construction roads, parking areas, access and wash areas: per square yard of aggregate/recycled concrete without reinforcing placed in 8-inch layers. No separate payment will be made for street cleaning necessary to meet TPDES requirements. Include cost of work for street cleaning under related Specification section.

B. Stipulated Price (Lump Sum) Contracts. If the Contract is a Stipulated Price Contract, include payment for work under this Section in the total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturers catalog sheets and other Product Data on geotextile fabric.

C. Submit sieve analysis of aggregates conforming to requirements of this Specification.

### 1.04 REFERENCES

A. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

B. Storm Water Quality Management Handbook For Construction Activities prepared by the City of Houston, Harris County and Harris County Flood Control District.

## PART 2 PRODUCTS

### 2.01 GEOTEXTILE FABRIC

A. Provide woven or non-woven geotextile fabric made of polypropylene, polyethylene, ethylene, or polyamide material.

B. Geotextile fabric: Minimum grab strength of 200 lbs in any principal direction (ASTM D-4632) and equivalent opening size between 50 and 140.

C. Geotextile and threads: Resistant to chemical attack, mildew, and rot and contain ultraviolet ray inhibitors and stabilizers to provide minimum of six months of expected usable life at temperature range of 0 to 120 degrees F.

D. Representative Manufacturers: Mirafi, Inc. or equal.

### 2.02 COARSE AGGREGATES

A. Coarse aggregate: Crushed stone, gravel, crushed blast furnace slag, or combination of these materials. Aggregate shall be composed of clean, hard, durable materials free from adherent coatings of, salt, alkali, dirt, clay, loam, shale, soft or flaky materials, or organic and injurious matter.

B. Coarse aggregates to consist of open graded rock 2" to 8" in size.

## PART 3 EXECUTION

### 3.01 PREPARATION AND INSTALLATION

A. Provide stabilized construction roads and access at construction, staging, parking, storage,
and disposal areas to keep street clean of mud carried by construction vehicles and equipment. Construct erosion and sediment controls in accordance with Drawings and Specification requirements.

B. Do not clear grub or rough cut until erosion and sediment control systems are in place, unless approved by Project Manager to allow soil testing and surveying.

C. Maintain existing construction site erosion and sediment control systems until acceptance of the Work or until removal of existing systems is approved by Project Manager.

D. Regularly inspect, repair or replace components of stabilized construction access. Unless otherwise directed, maintain stabilized construction roads and

access until the City accepts the Work. Remove stabilized construction roads and access promptly when directed by Project Manager. Discard removed materials off-site.

E. Remove and dispose of sediment deposits at designated spoil site for Project. If a spoil site is not designated on Drawings, dispose of sediment off-site at a location not in or adjacent to stream or flood plain. Assume responsibility for off-site disposal.

F. Spread compacted and stabilized sediment evenly throughout site. Do not allow sediment to flush into streams or drainage ways. Dispose of contaminated sediment in accordance with existing federal, state, and local rules and regulations.

G. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Immediately repair damage to erosion and sediment control systems caused by construction traffic.

H. Conduct construction operations in conformance with erosion control requirements of Specification 01570 – Storm Water Pollution Control.

3.02 CONSTRUCTION MAINTENANCE

A. Provide stabilized access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes where shown on Drawings.

B. Provide stabilized construction access and vehicle washing areas, when approved by Project Manager, of sizes and at locations shown on Drawings or as specified in this Section.

C. Clean tires to remove sediment on vehicles leaving construction areas prior to entering public right-of-ways. Construct wash areas needed to remove sediment. Release wash water into drainage swales or inlets protected by erosion and sediment control measures.

D. Details for stabilized construction access are shown on Drawings. Construct other stabilized areas to same requirements. Maintain minimum roadway widths of 14 feet for one-way traffic and 20 feet for two-way traffic and of sufficient width to allow ingress and egress. Place geotextile fabric as a permeable separator to prevent mixing of coarse aggregate with underlaying soil. Limit exposure of geotextile fabric to elements between laydown and cover to a maximum 14 days to minimize potential damage.

E. Grade roads and parking areas to provide sufficient drainage away from stabilized areas. Use sandbags, gravel, boards, or similar materials to prevent sediment from entering public right-of-ways, waterways or

storm water conveyance systems.

F. Inspect and maintain stabilized areas daily. Provide periodic top dressing with additional coarse aggregates to maintain required depth. Repair and clean out damaged control systems used to trap sediment. Immediately remove spilled, dropped, washed, or tracked sediment from public right-of-ways.

G. Maintain lengths of stabilized areas as shown on Drawings or a minimum of 50 feet. Maintain a minimum thickness of 8 inches. Maintain minimum widths at all points of ingress or egress.

H. Stabilize other areas with the same thickness, and width of coarse aggregate required for stabilized construction access, except where shown otherwise on Drawings.

I. Stabilized areas may be widened or lengthened to accommodate truck washing areas when authorized by Project Manager.

J. Clean street daily before end of workday. When excess sediments have tracked onto streets, Project Manager may direct Contractor to clean street as often as necessary. Remove and legally dispose of sediments.

K. Use other erosion and sediment control measures to prevent sediment runoff during rain periods and non-working hours and when storm discharges are expected.

END OF SECTION

Section 01576

# WASTE MATERIAL DISPOSAL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Disposal of waste material and salvageable material.

### 1.02 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

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

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

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

E. Describe waste materials expected to be stored on-site and a description of controls to reduce Pollutants from these materials, including storage practices to minimize exposure of materials to storm water; and spill prevention and response measures in the Project's Storm Water Pollution Prevention Plan (SWPPP). Refer to Section 01410 – TPDES Requirements.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION

### 3.01 SALVAGEABLE MATERIAL

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

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

C. Pipe Culvert: Load culverts designated for salvage into City trucks.

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

E. Coordinate loading of salvageable material on City trucks with Project Manager.

3.02 EXCESS MATERIAL

A. Remove and legally dispose of vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage from job site.

B. Excess soil may be deposited on private property adjacent to Project when written permission is obtained from property owner. See Paragraph 1.02 D above.

C. Verify flood plain status of any proposed disposal site. Do not dispose of excavated materials in area designated as within 100-year Flood Hazard Area unless "Development Permit" has been obtained. Remove excess material placed in "100-year Flood Hazard Area" within the City, without "Development Permit", at no additional cost to the City.

D. Remove waste materials from site daily, in order to maintain site in neat and orderly condition.

END OF SECTION

Section 01580

# PROJECT IDENTIFICATION SIGNS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project identification sign description.

B. Project sign installation.

C. Maintenance and removal of Project sign.

### 1.02 SYSTEM DESCRIPTION

A. Sign Construction: Construct signs of new materials in accordance with Standard Detail provided at the Pre-construction Conference.

B. Appearance: Maintain signs to present a clean and neat look throughout Contract duration.

C. Sign Manufacturer: Experienced professional sign company.

D. Sign Placement: At locations shown in Drawings unless otherwise specified by Project Manager at pre-construction meeting.

1. Provide one sign at each end of a linear Project involving paving, overlay, sewer line, storm drainage, or water main construction located in rights-of-ways.

2. Provide one sign for site or building construction Contracts

3. Provide one sign at each site for Contracts with multiple sites.

4. Sign Relocation: As work progresses, relocate signs if directed by Project Manager in writing. Include cost for one relocation of post-mounted signs in Contract Price. Subsequent relocations, if directed by Project Manager in writing, will be subject to Change Order.

E. Skid-mounted signs: Use for projects with noncontiguous locations where work progresses from one location to another. Design skid structure to withstand a 60 mile-per-hour wind load to the face or back of sign using stakes, straps, or ballast. Contractor shall be responsible for security of signs at each site.

1.03 SUBMITTALS

A. Submit Shop Drawings under provisions of Section 01330 - Submittal Procedures.

B. Show content, layout, lettering style, lettering size, and colors. Make sign and lettering to scale, clearly indicating condensed lettering, if used.

PART 2 PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: Use new sign materials.

1. Sign Posts: 4-inch by 4-inch pressure treated wood posts, 9 feet long for skid mounting and 12 feet long minimum for in-ground mounting.

2. Skid Bracing: 2-inch by 4-inch wood framing material.

3. Skid Members: 2-inch by 6-inch wood framing material.

4. Fasteners:
   a. Galvanized steel.
   b. Attach sign to posts with 1/2-inch by 5-1/2 inch button head carriage bolts and secure with nuts and flat head washers.
   c. Cover button heads with white reflective film or paint to match sign background.
   d. Use metal brackets and braces and 3/4-inch wood screws to attach sign header.

B. Sign and Sign Header: 3/4-inch thick marine plywood. Use 4-foot by 8 -foot sheet for the sign and a single piece for the header to minimize joints. Do not piece wood sheets to fabricate sign face.

C. Paint and Primers: White industrial grade, fast-drying, oil-based paint with gloss finish for structural and framing members, sign, and sign header material surfaces. Paint all sign surfaces prior to adding adhesive applications.

D. Colors:

1. Sign Background: Reflective white 3M Scotchlite Engineer Grade, Pressure Sensitive Sheeting (White), or approved equal.

2. Border: For red border around area, which designates project name and project amount, use reflective red 3M Scotchlite Engineer Grade, Pressure Sensitive Sheeting (Red), or approved equal.

3. Sign Film: 3M Scotchcal Pressure Sensitive Films, or approved equal for legends, symbols, lettering, and artwork. Match colors to 3M Scotchcal Pressure Sensitive Films.

| | | |
|---|---|---|
| a. | Lettering Below Seal: | Black |
| b. | Lettering Above Project Name: | Vivid Blue |
| c. | Lettering on Blue Background: | White |
| d. | Background Behind Project Name: | Vivid Blue |

E. City Seal: Project Manager will provide City seals to Contractor, as needed.

2.02 SIGN LAYOUT

A. Lettering:

1. Style, Size, and Spacing: Helvetica Regular lettering.

2. Condensed Style: Text may be condensed if needed to maintain sign composition.

B. Composition:

1. Lines with Standard Text
   a. Top line shall read "BUILDING TOGETHER FOR THE FUTURE".
   b. Use lower left below City Seal to list names and titles for Mayor, Controller and Council Members. Place as shown on Drawings with indicated size and spacing.
   c. Center telephone number of the Customer Response Center, "311", near the bottom of the area with the blue background.

2. Lines with Variable Text. Use blue background space for Project name and dollar amount.
   a. Project Manager will provide Project name and dollar amount of Project for preparation of sign. Center name on one or two lines, and dollar amount immediately below Project name, in area with blue background. Use condensed lettering if necessary.

2.03 LAYOUT AND COMPOSITION FOR HEADER

A. City of Houston Seal:
1. A space of approximately 24 inches in diameter is provided for the City seal, the top 6 inches of which extends above the sign on the sign header.

2. Construct sign header of same material as sign face. Cut material to match curve of the City seal.

3. Project Manager will provide the seal to be affixed to the sign by sign maker.

PART 3 E X E C U T I O N

3.01 INSTALLATION

A. Install Project identification signs within seven days after Date of Commencement of the Work.

B. Erect signs at locations shown in Drawings unless otherwise designated by Project Manager at pre-construction meeting. Position sign so it is fully visible and readable to general public.

C. Erect sign level and plumb.

D. If mounted on posts, sink posts 3 to 4 feet below grade and stabilize posts to minimize lateral motion. Leave a minimum of 8 feet of post above existing grade for mounting of sign.

E. Erect sign so that top edge of sign is at a nominal 8 feet above existing grade.

3.02 MAINTENANCE AND REMOVAL

A. Keep signs and supports clean. Repair deterioration and damage.

B. Remove signs, framing, supports, and foundations to a depth of at least 2 feet upon completion of Project. Restore area to a condition equal to or better than before construction.

END OF SECTION

| PROJECT No.:<br>(FILE NO: ) | CONTRACT No.: | REVIEWED BY: |
|---|---|---|

| *INSTRUCTIONS TO SIGN MAKER (LIST COMPANY NAME): | | |
|---|---|---|
| QTY. | ACTION ITEMS: | |
| | Make new sign(s) | |
| | Follow City standards attached | |
| | Provide submittal (drawing) to the City for project sign showing content, layout, lettering style, lettering size, and colors | |
| VARIABLE TEXT | | |
| Line 1 | Project Name: | |
| Line 2 | Project Amount (rounded to nearest $1000): | |
| ATTACHMENTS INCLUDED | | |
| QTY. | SEALS / LOGOS | |
| | City of Houston - 24" diameter | |
| | STANDARDS | |
| | Standard Specification Section 01580 - Project Identification Signs | |
| | Standard Detail<br>01580-02 Construction Sign | |

*(Instructions on reverse.)*

# PROJECT IDENTIFICATION SIGNS

## INSTRUCTIONS

Contractor produces this form. Contractor shall insert the information and provide the form to the sign maker with Contractor's purchase order.

List PROJECT No., (FILE No.), CONTRACT No., and name of City's Project Manager REVIEWED BY.

**INSTRUCTIONS TO SIGN MAKER:**

- Give COMPANY NAME of sign maker.
- Indicate QUANTITY of new signs to be made.
- Direction for sign maker to follow City Standards in making signs.
- Require submittals from sign maker, who provides Shop Drawing of Project sign showing content, layout, lettering style, lettering size, and colors.

**VARIABLE TEXT:**

- Give PROJECT NAME. Write it out in all caps and suggest line break. Lines are required.
- Give Project amount to be listed on sign. Round off to nearest $1000.

**ATTACHMENTS INCLUDED:**

- **Seals**

  City provides the quantity of City seals required, one for each Project sign.

- **Standards**

  Contractor provides set of Standards to sign maker, including (Specification Section 01580 - Project Identification Signs, and Standard Detail No. 01580-02 - Construction Sign.

Section 01581

# EXCAVATION IN PUBLIC WAY PERMIT SIGNS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project sign installation.

B. Maintenance and removal of Project sign.

### 1.02 SYSTEM DESCRIPTION

A. Sign Construction: Construct signs of new materials.

B. Appearance: Maintain signs to present a clean and neat look throughout the Contract duration.

C. Sign Placement: Place signs at each street entrance to street cut excavation.

### 1.03 SUBMITTALS

A. Submit Shop Drawings under provisions of Section 01330 - Submittal Procedures.

B. Show content, layout, lettering style, lettering size and colors. Make sign and lettering to scale, clearly indicating condensed lettering, if used.

## PART 2 PRODUCTS

### 2.01 SIGN LAYOUT

A. Conform to Texas Manual on Uniform Traffic Control Devices. Minimum size: 36 inches by 36 inches.

B. Lettering: Uppercase Helvetica Regular lettering.

C. Composition: Include on sign copy of street cut permit, title "City of Houston", contracting department's name, address, and emergency telephone number and Contractor's name. Project Manager will provide department name, address, and emergency telephone number for preparation of sign.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Install Project signs before commencement of pavement excavation in Public Way.

B. Position sign so it is fully visible and readable to general public.

C. Erect sign level and plumb.

D. Erect sign so that top edge of sign is at a nominal 8 feet above existing grade.

### 3.02 MAINTENANCE AND REMOVAL

A. Keep signs and supports clean. Repair deterioration and damage.

B. Remove signs, framing, supports and foundations to depth of at least 2 feet upon completion of the Work. Restore area to condition equal to or better than before construction.

END OF SECTION

Section 01610

# BASIC PRODUCT REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Requirements for transportation, delivery, handling, and storage of Products.

### 1.02 PRODUCTS

A. Products: Defined in Document 00700 – General Conditions. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components designated for reuse.

B. Do not reuse materials and equipment, designated for removal, except as specified by the Contract.

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

### 1.03 TRANSPORTATION

A. Make arrangements for transportation, delivery, and handling of Products required for timely completion of the Work.

B. Transport and handle Products in accordance with manufacturer's instructions.

C. Consign and address shipping documents to proper party giving name of the Project and its complete street address. Shipments shall be delivered to Contractor.

### 1.04 DELIVERY

A. Arrange deliveries of Products to accommodate short-term site completion schedules and in ample time to facilitate inspection prior to Installation. Avoid deliveries that cause lengthy storage or overburden of limited storage space.

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

1. Work of other contractors or the City.

2. Limitations of storage space.

3. Availability of equipment and personnel for handling Products.

4. The City's use of premises.

C. Have Products delivered to the site in manufacturer's original, unopened, labeled containers.

D. Immediately upon delivery, inspect shipment to assure:

1. Product complies with requirements of the Contract.

2. Quantities are correct.

3. Containers and packages are intact; labels are legible.

4. Products are properly protected and undamaged.

1.05 PRODUCT HANDLING

A. Coordinate off-loading of Products delivered to the site. If necessary during construction, move and relocate stored Products at no additional cost to the City.

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

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

D. Handle Products by methods to prevent over-bending or overstressing.

E. Lift heavy components only at designated lifting points.

F. Handle Products in accordance with manufacturer's recommendations.

G. Do not drop, roll, or skid Products off delivery vehicles. Hand-carry or use suitable materials handling equipment.

1.06 STORAGE OF PRODUCTS

A. Store and protect Products in accordance with manufacturer's recommendations and requirements of these Specifications.

B. Make necessary provisions for safe storage of Products. Place Products so as to prevent damage to any part of the Work or existing facilities and to maintain free access at all times to all parts of the Work and to utility service company installations in the vicinity of the Work. Keep Products neatly and compactly stored in locations that will cause minimum inconvenience to other contractors, public travel, adjoining owners, tenants, and occupants. Arrange storage in a manner so as to provide easy access for inspection.

C. Restrict storage to areas available on the site for storage of Products as shown on Drawings or approved by Project Manager.

D. Provide off-site storage and protection when on-site storage is not adequate. Provide addresses of, and access to, off-site storage locations for inspection by Project Manager.

E. Do not use lawns, grass plots, or other private property for storage purposes without written permission of owner or other person in possession or control of premises.

F. Protect stored Products against loss or damage.

G. Store in manufacturers' unopened containers.

H. Neatly, safely, and compactly stack Products delivered and stored along the line of the Work to avoid inconvenience and damage to property owners and general public, and maintain at least 3 feet clearance around fire hydrants. Keep public, private driveways and street crossings open.

I. Repair or replace damaged lawns, sidewalks, streets or other improvements to satisfaction of Project Manager. Total length that Products may be distributed along route of construction at one time is 1000 linear feet, unless otherwise approved in writing by Project Manager.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01630

# PRODUCT SUBSTITUTION PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Options for making Product or process selections.

B. Procedures for proposing equivalent Products or processes, including pre-approved, pre-qualified, and approved Products or processes.

### 1.02 DEFINITIONS

A. Product: As defined in Document 00700 – General Conditions. Product does not include machinery and equipment used for production, fabrication, conveying, and erection of the Work. Products may also include existing materials or components designated for reuse.

B. Process: Any proprietary system or method for installing system components resulting in an integral, functioning part of the Work. For this Section, the word Products includes Processes.

### 1.03 SELECTION OPTIONS

A. Pre-approved Products: Construction products of certain manufacturers or Suppliers designated in Specifications as "pre-approved." The City maintains a list of pre-approved products. Pre-approved Products for this Project are designated as pre-approved in Specifications. Products of other manufacturers or suppliers are not acceptable for this Project and will not be considered under the submittal process for approving alternate products.

B. Pre-qualified Products: Construction products of certain manufacturers or Suppliers designated in Specifications as "pre-qualified." Pre-qualified Products for this Project are designated as pre-qualified in Specifications. Products of other manufacturers or suppliers are not acceptable for this Project and will not be considered under the submittal process for approving alternate products.

C. Approved Products: Construction products of certain manufacturers or Suppliers designated in Specifications followed by words "or approved equal." Approval of alternate products not listed in Specifications may be obtained through provisions for product options and substitutions in Document 00700 - General Conditions, and by following submittal procedures specified in

Section 01330- Submittal Procedures. The procedure for approval of alternate products is not applicable to pre-approved or pre-qualified products.

D. Product Compatibility: To the maximum extent possible, provide Products that are of the same type or function from a single manufacturer, make, or source. Where more than one choice is available, select Product that is compatible with other Products already selected, specified, or in use by the City.

1.04 CONTRACTOR'S RESPONSIBILITY

A. Responsibility related to Product options and substitutions is defined in Document 00700 - General Conditions.

B. Furnish information Project Manager deems necessary to judge equivalency of alternate Product.

C. Pay for laboratory testing, as well as any other review or examination costs, needed to establish equivalency between products in order to obtain information upon which Project Manager can base a decision.

D. If Project Manager determines alternate product is not equal to that named in Specifications, Furnish one of the specified Products.

1.05 CITY REVIEW

A. Use alternate Products only when approved in writing by Project Manager. Project Manager's determination regarding acceptance of proposed alternate Product is final.

B. Alternate Products shall be accepted if Products are judged by Project Manager to be equivalent to specified Product or to offer substantial benefit to the City.

C. The City retains the right to accept any Product deemed advantageous to the City, and similarly, to reject any product deemed not beneficial to City.

1.06 SUBSTITUTION PROCEDURE

A. Collect and assemble technical information applicable to the proposed Product to aid in determining equivalency as related to the approved Product specified.

B. Submit a written request for a construction Product to be considered as an alternate Product.

C. Submit Product information after the effective date of the Contract and within the time period allowed for substitution submittals given in Document 00700 - General Conditions. After the submittal period has expired, requests for alternate Products shall be considered only when specified Product becomes unavailable because of conditions beyond Contractor's control.

D. Submit five copies of each request for alternate Product approval. Include the following information:

1. Complete data substantiating compliance of proposed substitution with the Contract.

2. For Products:
   a. Product identification, including manufacturer's name and address.
   b. Manufacturer's literature with Product description, performance and test data, and reference standards.
   c. Samples, as applicable.
   d. Name and address of similar projects on which Product was used and date of installation. Include names of Owner, design consultant, and installing contractor.

3. For construction methods:
   a. Detailed description of proposed method.
   b. Drawings illustrating methods.

4. Itemized comparison of proposed substitution with Product or method specified.

5. Data relating to changes in Construction Schedule.

6. Relation to separate contracts, if any.

7. Accurate cost data on proposed substitution in comparison with Product or method specified.

8. Other information requested by Project Manager.

E. Approved alternate Products will be subject to the same review process as the specified Product would have been for Shop Drawings, Product Data, and Samples.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01725

# FIELD SURVEYING

## PART 1 GENERAL

### 1.01 QUALITY CONTROL

A. Conform to State of Texas laws for surveys requiring licensed surveyors. Employ a surveyor acceptable to Project Manager if required by the Contract.

### 1.02 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit name, address, and telephone number of Surveyor to Project Manager before starting survey work.

C. Submit documentation verifying accuracy of survey work on request.

D. Submit certificate signed by Surveyor, that elevations and locations of the Work are in conformance with the Contract.

### 1.03 PROJECT RECORD DOCUMENTS

A. Maintain a complete and accurate log of control and survey work as it progresses.

B. Prepare a certified survey setting forth dimensions, locations, angles, and elevations of construction and site work upon completion of foundation walls and major site improvements.

C. Submit record documents under provisions of Section 01785 - Project Record Documents.

### 1.04 EXAMINATION

A. Verify locations of survey control points prior to starting the Work.

B. Notify Project Manager immediately if any discrepancies are discovered.

### 1.05 SURVEY REFERENCE POINTS

A. The City will establish survey control datum as provided in Document 00700 - General Conditions and as indicated on Drawings. Inform Project Manager in advance of time horizontal and vertical control points will be established so

verification deemed necessary by Project Manager may be done with minimum inconvenience to the City or Contractor.

B. Locate and protect survey control points prior to starting site work; preserve permanent reference points during construction.

C. Notify Project Manager a minimum of 48 hours before relocation of reference points is needed due to changes in grades or other reasons.

D. Promptly report loss or destruction of reference points to Project Manager.

E. Reimburse the City for cost of reestablishment of permanent reference points disturbed by construction operations.

1.06 SURVEY REQUIREMENTS

A. Utilize recognized engineering survey practices.

B. Establish a minimum of two permanent benchmarks on site, referenced to established control points. Record horizontal and vertical location data on Project record documents.

C. Establish elevations, lines and levels to provide quantities required for measurement and payment and for appropriate controls for the Work. Locate and lay out the following with appropriate instruments:

1. Site improvements including grading, fill and topsoil placement, utilities, and footings and slabs

2. Grid or axis for structures

3. Building foundation, column locations, and ground floor elevations

D. Periodically verify layouts.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01731

# CUTTING AND PATCHING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Cutting, patching and fitting of the Work or work under construction. Coordinating Installation or connection of the Work to existing facilities, or uncovering work for access, inspection or testing and related submittals.

### 1.02 CUTTING AND PATCHING

A. Perform activities to avoid interference with facility operations and work of others in accordance with Document 00700 - General Conditions of Contract.

B. Execute cutting and patching, including excavation, backfill and fitting to:

1. remove and replace defective work or work not conforming to Drawings and Specifications;
2. take samples of installed work as required for testing;
3. remove construction required to provide for specified alterations or additions to existing work;
4. uncover work to allow inspection or reinspection by Project Manager or regulatory agencies having jurisdiction;
5. connect uninstalled work to completed work in proper sequence;
6. remove or relocate existing utilities and pipes that obstruct work;
7. make connections or alterations to existing or new facilities;
8. provide openings, channels, chases and flues and cut, patch, and finish; if required; or
9. provide protection for other portions of the Work.

C. Restore existing work to a condition equal to or better than that which existed prior to cutting and patching, and to standards required by Specifications.

D. Support, anchor, attach, match, trim and seal materials to work of others. Unless otherwise specified, Furnish and Install sleeves, inserts, and hangers required for execution of the Work.

E. Provide shoring, bracing and support necessary to maintain structural integrity and to protect adjacent work from damage during cutting and patching. Request written approval from Project Manager, before cutting structural members such as beams, anchors, lintels, or other supports. Follow approved submittals, as applicable.

F. Match new materials to existing materials by bonding, lapping, mechanically tying, anchoring or other effective means in order to prevent cracks and to minimize evidence of patching. Conceal effects of demolition and patching by blending new construction to existing surfaces. Avoid obvious breaks, joints or changes of surface appearance unless shown on Drawings or authorized by Project Manager.

1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit a written request to Project Manager for consent to proceed, before conducting cutting operations that might affect structural integrity, design function, City operations, or work of another contractor.

C. Include the following in submittal:

1. Identification of Project

2. Description of affected work

3. Necessity for cutting

4. Effect on other work and on structural integrity

5. Describe the proposed work including:
   a. Scope of cutting and patching
   b. Contractor, Subcontractor or Supplier who will execute the work
   c. Proposed Products
   d. Extent of refinishing
   e. Schedule of operations

6. Alternatives to cutting and patching

D. When work conditions or schedules dictate the need for change of materials or methods, submit a written recommendation to Project Manager that includes:

1. conditions necessitating the change;

2. recommendations for alternative materials or methods; and

3. submittals required for proposed substitutions

E. Notify Project Manager in writing when work will be uncovered for observation. Do not begin cutting or patching operations until authorized by Project Manager.

1.04 CONNECTIONS TO EXISTING FACILITIES

A. Perform construction operations necessary to complete connections and tie-ins to existing facilities. Keep existing facilities in continuous operation unless otherwise permitted in the Specifications or approved in writing by Project Manager.

B. Coordinate interruption of service requiring connection to existing facilities with Project Manager. Do not bypass wastewater or sludge to waterways. Provide temporary pumping facilities to handle wastewater if necessary. Use temporary bulkheads to minimize disruption. Provide temporary power and piping to facilitate construction where necessary.

C. Submit a detailed schedule of proposed connections, including shut-downs and tie-ins. Include proposed time and date as well as anticipated duration of work. Coordinate the connection schedule with the construction schedule.

1. Submit specific times and dates to Project Manager at least 48 hours in advance of proposed work.

D. Procedures and Operations:

1. Operate existing pumps, valves and gates in required sequence under supervision of Project Manager. Do not operate valves, gates or other items of equipment without Project Manager's knowledge.

2. If possible, test equipment under operating conditions before making final tie-ins to connect equipment to existing facility.

3. Coordinate work and schedules. Notify Project Manger at least 48 hours before shutdowns or bypasses are required.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01732

# PROCEDURE FOR WATER VALVE ASSISTANCE

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Operation of valves. City of Houston employees will operate existing valves. Contractor's employees may operate new valves included in the Project prior to acceptance by the City.

### 1.02 PROCEDURE

A. Perform activities listed in Exhibit A attached to this Section.

### 1.03 SUBMITTALS

A. Submit request for work order planning meetings in accordance with Exhibit A. Include information listed in Step 1 of Exhibit A, attached to this Section.

### 1.04 CANCELLATION

A. Contractor, Project Manager, or Public Utilities Division may cancel a scheduled valve assistance appointment at no extra cost or payment to Contractor. Contractor shall notify City's appointed Project Inspector ("Inspector") 24 hours in advance of cancellation. Inspector shall notify Central Operation Service (COS) immediately upon receipt of cancellation notice. Cancellation may be caused by bad weather, preparation work taking longer than anticipated, or unforeseen delays by one or more of the three parties.

## PART 2 P R O D U C T S - Not Used

## PART 3 E X E C U T I O N - Not Used

END OF SECTION

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# EXHIBIT A

## PROCEDURE FOR VALVE ASSISTANCE

The following procedure will be used by Utility Maintenance Branch personnel when completing a service request from individual Contractors, through Inspector, for operation of existing water valves.

### ROUTINE VALVE ASSISTANCE REQUEST (NON-EMERGENCY JOBS):

**Step 1.** a. When notified by Contractor, Inspector will schedule a work order planning meeting by calling Central Operation Service (COS) at **(713) 295-5521** and providing information shown below. The work order planning meeting shall be conducted a minimum of three days after the request; excluding weekends, holidays, inclement weather days, and the day of the call.

| | |
|---|---|
| Location of Work (Street Intersection) | Project # |
| Project Description | Contractor (Company Name) |
| Job Superintendent's Name | Superintendent's Office #/Mobile #/Pager # |
| Contractor's Emergency Information | Name and Phone #/Mobile #/Pager # |
| Inspector/Senior Inspector | Name, Phone #/Mobile #/Pager # |
| Date & Time assistance is requested | |

b. COS will create a work order for each wet connection, cut and plug, etc. that will be designated as a "Code 40" (Private Contractor).

c. COS will give Inspector the work order number. This work order number must be used as a reference in all communications regarding this request for Valve Assistance.

d. Valve personnel must have the work order number on their route sheet. When valve personnel arrive at the job site for the Work Order Planning Meeting between Inspector, Contractor, and Utility Maintenance valve personnel, they will verify the street intersection and work order number with the Inspector before beginning Work Order Planning Meeting.

e. During Work Order Planning Meeting, the work to be performed will be outlined and the actual date work will be performed will be mutually determined by Inspector, Contractor and City's Utility Maintenance Division valve personnel, based upon relevant factors such as preparatory work needed, customer requirements, etc.

f. Valve personnel will perform work specifically outlined in the work order requested. Also, Utility Maintenance Branch valve personnel will only operate existing water valves. Inspector must contact COS and request a new work order for additional work.

g. Valve personnel will contact the dispatcher and advise when the job is complete. Valve personnel will list all appropriate information on the Crew Activity Report.

**Step 2.** Should valve personnel not be able to keep an appointment to provide valve assistance, Utility Maintenance Branch will provide notification to appropriate Inspector by phone at least 24 hours prior, with that fact and rescheduling information, if available.

**Step 3.** Inspector will notify COS if valve personnel have not arrived at the site within 30 minutes of scheduled appointment. If Contractor is not ready when valve operator arrives to provide valve assistance, the City shall charge Contractor $50.00 per hour, starting 15 minutes after the scheduled appointment time, minimum one hour charge.

**Step 4.** Contractor will not be due delay claims or downtime if Utility Maintenance Branch has notified Inspector that they will not be able to provide valve assistance as scheduled.

**Step 5.** Test installed new valves in the presence of Inspector before substantial completion inspection is scheduled. Place new valves in open position on or before the Date of Substantial Completion.

**Step 6.** Project Manager will notify, in writing, Utility Maintenance Branch two months before the warranty expires to report any problems they have with new water lines. Project Manager will notify Contractor about these problems.

## EMERGENCY REQUEST FOR VALVE ASSISTANCE PROCEDURE:

**Step 1.** When notified by Contractor, Inspector will request emergency Valve Assistance due to a broken line/service, etc. by calling COS at **(713) 295-5521** and providing the following information:

| | |
|---|---|
| Location of Work (Street Intersection) | Project # |
| Project Description | Superintendent's Office #/Mobile #/Pager # |
| Contractor (Company Name) | Name and Phone #/Mobile #/Pager # |
| Job Superintendent's Name | Name, Phone #/Mobile #/Pager # |
| Contractor's Emergency Information | |
| Inspector/Senior Inspector | |
| Date & Time assistance is requested | |

**Step 2.** COS will create an emergency work order number and describe the work to be performed.

**Step 3.** COS will give Inspector the emergency work order number. Reference work order number in all communications regarding request for Valve Assistance.

**Step 4.** COS will contact designated valve personnel and assign emergency work order. Dispatcher will follow standard COS procedures if this situation occurs after normal working hours.

**Step 5.** Valve personnel must have the emergency work order number on the route sheet. When valve personnel arrive at the job site for emergency work, they will verify the street intersection and emergency work order number with Inspector prior to beginning work requested for operating existing water valves. Valve personnel will coordinate verification of street intersection and work order number with Inspector prior to performing work.

Section 01740

# SITE RESTORATION

## PART 1 G E N E R A L

### 1.01 SECTION INCLUDES

A. Restoration of site affected by the Work in public or private property, including pavement, esplanades, sidewalks, driveways, fences, lawns and landscaping.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for restoration of Project site disturbed by utility construction operations is on a linear foot basis. Measurement will be as provided for corresponding utility in each Specification section. No separate payment made for branch pipe, valves and, other associated work for utilities. Measurement for restoration with multiple utilities within the same right-of-way will be on a linear foot basis for only one utility.

2. No separate payment made for facility or roadway projects. Include cost in the surface improvements associated with the facility or roadway construction.

3. Payment includes required site restoration within the right-of-way or easement regardless of size or type of pipe, method of construction, paved or unpaved areas or thickness and width of pavement.

4. No separate payment made for site restoration for service connections under this Section. Include cost in appropriate utility section.

5. Refer to Section 01270 – Measurement and Payment for Unit Price procedures.

B. Stipulated Price (Lump Sum) Contracts. If Contract is Stipulated Price Contract, include payment for work under this section in total Stipulated Price.

### 1.03 DEFINITIONS

A. Phase: Locations identified on the plans and listed in Section 1110 – Summary of Work under Work Sequence.

B. Site Restoration: Replacement or reconstruction of Site Improvements located in rights-of-way, easements, public property, and private property affected or altered by the Work.

C. Site Improvement: Includes pavement, curbs and gutters, esplanades, sidewalks, driveways, fences, lawns, irrigation systems, landscaping, and other improvements in existence at the Project site before commencement of construction operations.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Schedule of testing, service connections, abandonment, backfill, and site restoration.

C. Sample of notices to residents outlining their responsibility for maintenance of site improvements adjacent to the Project that are not disturbed by construction operations

1.05 SCHEDULING

A. Schedule testing, service connections, abandonment, backfill and site restoration immediately following completion of pipe laying work or paving within each block or line segment.

B. Phased Construction:

1. Commencement of subsequent Phase will follow scheduling of site restoration of prior Phase. Limit work to a maximum of two Phases of the project.

C. Construction of Projects with no Phases listed in Section 01110- Summary of Work:

1. Complete site restoration prior to disturbing over 50% of total project linear feet or 2,000 linear feet, whichever is greater, of right-of-way or easement.

2. Limit work to a maximum of 50% of total project linear feet or 2,000 linear feet, whichever is greater, of right-of-way and easement. Commence work in additional right-of-way or easement after completion of site restoration.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Pavement, Sidewalks and Driveways: Materials specified in Section 02951 - Pavement Repair and Resurfacing.

B. Seeding and Sodding: Sod specified in Section 02922 - Sodding and Seed specified in Section 02921 - Hydromulch Seeding.

C. Trees, Shrubs and Plantings: Conform to requirements of Section 01562 – Tree and Plant Protection.

## PART 3 EXECUTION

### 3.01 Preparatory Work

A. Provide cleanup and restoration crews to work closely behind pipe laying and roadway construction crews, and where necessary, during testing, service restoration, abandonment, backfill and surface restoration.

B. Water Lines: Unless otherwise approved by Project Manager, comply with the following:

1. Once Project Manager approves work within a Phase, immediately begin preparatory work for disinfection effort.

2. No later than three days after completing disinfection preparatory work, submit to City appropriate request for disinfection.

3. If City fails to perform initial disinfection of lines in accordance with Section 2514 - Disinfection of Water Lines, within seven days from submission of appropriate request, and if approved by Project Manager, pipe laying operations may continue beyond approved limits until the City responds.

4. Immediately after transfer of services, begin abandonment of old water lines and site restoration.

C. Wastewater Lines:

1. Once Project Manager approves work within a Line Segment, immediately begin preparatory work for testing effort.

2. No later than three days after completing preparatory work for testing, initiate testing work.

3. Immediately after transfer of service connections, begin abandonment of old wastewater lines, and site restoration.

D. Street Construction and Paving Projects

1. Once Project Manager approves work within a Line Segment or block, immediately begin preparatory work for testing effort.

2. No later than three days after completing preparatory work for testing, initiate testing work.

3. Immediately after testing begin site restoration.

E. Street Construction and Paving Projects

1. Once Project Manager approves work within a block, immediately begin preparatory work for sidewalk construction, sodding and hydromulching and tree planting.

2. No later than seven days after completing preparatory work, initiate construction.

3.02 CLEANING

A. Remove debris and trash to maintain a clean and orderly site in accordance with requirements of General Conditions and Section 01576 - Waste Material Disposal.

3.03 LANDSCAPING AND FENCES

A. Seeding and Sodding.

1. Remove construction debris and level area with bank sand so that new grass surface matches level of existing grass and maintains pre-construction drainage patterns. Level and fill minor ruts or depressions caused by construction operations with bank sand, where grass is still viable.

2. Restore previously existing turfed areas with sod and fertilize in accordance with Section 02922 - Sodding. Sod to match existing turf.

3. Restore unpaved areas not requiring sodding with hydromulch seeding conforming to Section 02921 - Hydromulch Seeding.

B. Trees, Shrubbery and Plants.

1. Remove and replant trees, shrubs, and plants in accordance with requirements of Section 01562 – Tree and Plant Protection.

C. Fence Replacement.

1. Replace removed or damaged fencing to equal or better condition than existed prior to construction, including concrete footings and mow strips. Provide new wood posts, top and bottom railing and panels. Metal fencing material, not damaged by the Work, may be reused.

2. Remove and dispose of damaged or substandard material.

3.04 MAINTENANCE

A. Maintain shrubs, plantings, sodded areas and seeded areas.

B. Replace shrubs, plantings and seeded or sodded areas that fail to become established.

C. Refer to Section 01562 - Tree and Plant Protection, Section 02921 - Hydromulch Seeding and Section 02922 - Sodding for maintenance requirements.

END OF SECTION

Section 01770

# CLOSEOUT PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedures to establish Date of Substantial Completion.

B. Closeout procedures for final submittals, O&M data, warranties, spare parts and maintenance materials.

C. Texas Department of Licensing and Regulation (TDLR) inspection for Texas Accessibility Standards (TAS) compliance.

### 1.02 SUBSTANTIAL COMPLETION

A. Comply with Document 00700 - General Conditions regarding Date of Substantial Completion when Contractor considers the Work, or portion thereof designated by Project Manager, to be substantially complete.

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

1. cutting, plugging, and abandoning of water, wastewater, and storm sewer lines, as required by Contract documents for each item;

2. construction of, and repairs to, pavement, driveways, sidewalks, and curbs and gutters;

3. sodding and hydromulch seeding, unless waived by Project Manager in writing;

4. general clean up including pavement markings, transfer of services, successful testing and landscape;

5. additional requirements contained in Section 01110 - Summary of Work.

C. Assist Project Manager with inspection of Contractor's list of items and complete or correct the items, including items added by Project Manager, within specified time period.

D. Should Project Manager's inspection show failure of Contractor to comply with requirements to obtain Date of Substantial Completion, including those items in Paragraph 1.02 B. of this section, Contractor shall complete or correct the items, before requesting another inspection by Project Manager.

1.03 CLOSEOUT PROCEDURES

A. Comply with Document 00700 - General Conditions regarding final completion and final payment when the Work is complete and ready for Project Manager's final inspection.

B. Provide Project Record Documents in accordance with Section 01785 - Project Record Documents.

C. Complete or correct items on punch list, with no new items added. Address new items during warranty period.

D. The City will occupy portions of the Work as specified in other sections.

1.04 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. For facilities, clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to sanitary condition.

D. Clean or replace filters of operating equipment.

E. Clean debris from roofs, gutters, down spouts, and drainage systems.

F. Clean site; sweep paved areas, and rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and temporary construction facilities from site following final test of utilities and completion of the Work.

1.05 ADJUSTING

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

1.06 OPERATION AND MAINTENANCE DATA

A. Submit O&M data as noted in Section 01330 - Submittal Procedures.

B. Five percent of lump sum amount of each piece of equipment as indicated in Schedule of Unit Price Work or Schedule of Values will be paid after the required O&M data submittals are received and approved by Project Manager.

1.07 WARRANTIES

A. Provide one original of each warranty from Subcontractors, Suppliers, and manufacturers.

B. Provide Table of Contents and assemble warranties in a 3-ring/D binder with durable plastic cover.

C. Submit warranties prior to final progress payment.

D. Warranties shall commence in accordance with the requirements in Document 00700 - General Conditions.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification sections.

B. Deliver to a location within the City limits as directed by Project Manager. Applicable items must be delivered prior to issuance of a final Certificate for Payment.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01785

# PROJECT RECORD DOCUMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Maintenance and submittal of record documents and Samples.

### 1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Maintain one record copy of documents at the site in accordance with Document 00700 - General Conditions.

B. Store record documents and Samples in field office, if a field office is required by the Contract, or in a secure location. Provide files, racks, and secure storage for record documents and Samples.

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

D. Maintain record documents in a clean, dry, and legible condition. Do not use record documents for construction purposes. Do not use permit drawings to record Modifications to the Work.

E. Keep record documents and Samples available for inspection by Project Manager.

F. Bring record documents to progress review meetings for viewing by Project Manager and, if applicable, Design Consultant.

### 1.03 RECORDING

A. Record information legibly with red ink pen on a set of blueline opaque drawings, concurrently with construction progress. Maintain an instrument on site at all times for measuring elevations accurately. Do not conceal work until required information is recorded

B. Contract Drawings and Shop Drawings: Mark each item to record completed Modifications, or when minor deviations exist, the actual construction including:

1. Measured depths of elements of foundation in relation to finish first floor datum.
2. Measured horizontal locations and elevations of Underground Facilities and appurtenances, referenced to permanent surface improvements.

3. Elevations of Underground Facilities referenced to City of Houston benchmark utilized for the Work.

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

5. Dimensions and details of field changes

6. Changes made by Modifications.

7. Details not on original Drawings.

8. References to related Shop Drawings and Modifications.

C. Survey all joints of water mains at the time of construction. Record on Drawings, water main invert elevation, elevation top of manway, and centerline horizontal location relative to baseline.

D. For large diameter water mains, mark specifications and addenda to record:

1. Manufacturer, trade name, catalog number and Supplier of each Product actually Installed.

2. Changes made by Modification or field order.

3. Other matters not originally specified.

E. Annotate Shop Drawings to record changes made after review.

1.04 SUBMITTALS

A. At closeout of the Contract, deliver Project record documents to Project Manager.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 02082

# PRECAST CONCRETE MANHOLES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Precast concrete manholes for sanitary sewers, storm sewers, and water lines.

B. Precast concrete sanitary sewer manholes with PVC liner where corrosion resistant manholes are specifically indicated in Drawings.

C. Pile-supported concrete foundation used for unstable subgrade treatment for manhole base.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

1. Payment for normal depth manholes, up to 8 feet deep, is on a unit price basis for each manhole installed. Manhole depth is measured from top of cover to sewer invert. Air release manhole depth is measured from top of cover to inside base for air release or vacuum release manholes. Manholes for water lines are measured from top of cover to inside base of manhole.

2. Payment for shallow depth manholes is on a unit price basis for each manhole installed. Shallow manholes have a depth of 5 feet or less measured from top of cover to sewer invert.

3. Payment for extra depth manholes is on a unit price basis per vertical foot for each foot of depth greater than 8 feet. Sewer manhole depth is measured from top of cover to sewer invert. Air release manhole depth is measured from top of cover to inside base for air release or vacuum release manholes. Manholes for water lines are measured from top of cover to inside base of manhole.

4. Payment for normal depth corrosion resistant manholes is on a unit price basis for each manhole installed

5. Payment for standard manhole drops is on a unit price basis for each drop installed. Standard manhole drops include both internal and external drops.

6. Payment for watertight manholes, including external vent pipe is on a unit price basis for each.

7. Payment for air-release manhole with valves and fittings installed is on a unit price basis for each manhole with air-release valves and fittings installed.

8. Payment for pile-supported concrete foundation used for unstable subgrade treatment for manhole base is on a unit price basis for each foundation installed.

9. Pay estimates for partial payments will be made as measured above according to the following schedule for sanitary sewer manholes:

    1. Estimate for 90 percent payment will be authorized when the manhole is completely installed and surrounding soil backfilled

    2. Estimate for 100 percent payment will be authorized when manhole has been tested as specified in Section 02533 - Acceptance Testing for Sanitary Sewers

10. Refer to Section 01270 - Measurement and Payment for unit price procedures

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASME B 16.1 - Cast Iron Pipe Flanges and Flanged Fittings

B. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile

C. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

D. ASTM C 270 - Standard Specification for Mortar for Unit Masonry

E. ASTM C 443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

F. ASTM C 478 - Standard Specification for Precast Reinforced Concrete Manhole Sections

G. ASTM C 923 - Standard Specifications for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes

H. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

I. ASTM D 698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft$^3$)

J. ASTM D 2665 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste and Vent Pipe and Fittings

K. ASTM D 2996 - Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe

L. ASTM D 2997 - Standard Specification for Centrifugally Cast "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe

M. ASTM F 2306 – Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

N. ASTM F 2510 – Standard Specification for Resilient Connectors between Concrete Manhole Structures and Corrugated High Density Polyethylene Drainage Pipes.

O. AWWA C 213 - Standard for Fusion Bonded Epoxy Coating for Interior and Exterior of Steel Water Pipelines

P. American Association of State Highway and Transportation Officials (AASHTO)

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturer's data and details of following items for approval:

1. Shop drawings of manhole sections, base units and construction details, including reinforcement, jointing methods, materials and dimensions.

2. Summary of criteria used in manhole design including, as minimum, material properties, loadings, load combinations, and dimensions assumed. Include certification from manufacturer that precast manhole design is in full accordance with ASTM C 478 and design criteria as established in Paragraph 2.01E of this Specification.

3. Frames, grates, rings, and covers

4. Materials to be used in fabricating drop connections

5. Materials to be used for pipe connections at manhole walls

6. Materials to be used for stubs and stub plugs, if required

7. Materials and procedures for corrosion-resistant liner and coatings, if required.

8. Plugs to be used for sanitary sewer hydrostatic testing

9. Manufacturer's data for pre-mix (bag) concrete, if used for channel inverts and benches

C. Seal submittal drawings by Professional Engineer registered in State of Texas.

## PART 2 PRODUCTS

### 2.01 PRECAST CONCRETE MANHOLES

A. Provide manhole sections, base sections, and related components conforming to ASTM C 478. Provide base riser section with integral floors, unless shown otherwise. Provide adjustment rings which are standard components of manufacturer of manhole sections. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.

B. Construct barrels for precast manholes from standard reinforced concrete manhole sections of diameter indicated on Drawings. Use various lengths of manhole sections in combination to provide correct height with fewest joints. Design wall sections for depth and loading conditions in Paragraph 2.01 E, with minimum thickness of 5 inches. Base section shall have minimum thickness of 12 inches under invert.

C. Provide tops to support AASHTO M-306 loading, and receive manhole frame & covers, as indicated on Drawings.

D. Where manholes larger than 48-inch diameter are indicated on Drawings, provide precast base sections with flat slab top precast sections used to transition to 48-inch diameter manhole access riser sections. Transition can be concentric or eccentric unless otherwise shown on Drawings. Locate transition to provide minimum of 7-foot head clearance from base to underside of transition unless otherwise approved by Project Manager.

E. Design Loading Criteria: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed, by manufacturer, to requirements of ASTM C 478 for depth as shown on Drawings and to resist following loads.

1. AASHTO M-306 loading applied to manhole cover and transmitted down to transition and base slabs

2. Unit soil weight of 120 pcf located above portions of manhole, including base slab projections

3. Lateral soil pressure based on saturated soil conditions producing an at-rest equivalent fluid pressure of 100 pcf

4. Internal liquid pressure based on unit weight of 63 pcf

5. Dead load of manhole sections fully supported by transition and base slabs

F. Design: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed according to requirements of ASTM C 478 and following:

1. Design additional reinforcing steel to transfer stresses at openings. Area of steel to be no less than shown on Drawings.

2. Wall loading conditions:

a. Saturated soil pressure acting on empty manhole

b. Manhole filled with liquid to a halfway depth as measured from invert to cover, with no balancing external soil pressure

3. Minimum clear distance between two wall penetrations shall be 12 inches or half diameter of smaller penetration, whichever is greater

G. Provide joints between sections with o-ring gaskets conforming to ASTM C 443.

H. When base is cast monolithic with portion of vertical section, extend reinforcing in vertical section into base.

I. Precast Concrete Base: Suitable cutouts or holes to receive pipe and connections. Lowest edge of holes or cutouts: For water line manhole, no less than 6 inches above inside surface of floor of base.

2.02 CONCRETE

A. Conform to requirements of Section 03315 - Concrete for Utility Construction.

B. Channel Inverts: Use 5 sack premix (bag) concrete or Class A concrete for inverts not integrally formed with manhole base, with minimum compressive strength of 4000 psi.

C. Cement Stabilized Sand Foundation: Provide cement stabilized sand foundation under base section in lieu of foundation slab, as shown on Drawings, conforming to requirements of Section 02321 - Cement Stabilized Sand.

D. Concrete Foundation: Provide Class A concrete with minimum compressive strength of 4000 psi for concrete foundation slab under manhole base section where indicated on Drawings.

2.03 REINFORCING STEEL

A. Conform to requirements of Section 03315 - Concrete for Utility Construction.

2.04 MORTAR

A. Conform to requirements of Section 04061 - Mortar.

2.05 MISCELLANEOUS METALS

A. Provide cast-iron frames, rings, and covers conforming to requirements of Section 02084 - Frames, Grates, Rings and Covers.

2.06 DROP CONNECTIONS AND STUBS

A. Provide drop connections and stubs conforming to same pipe material requirements used in main pipe, unless otherwise indicated on Drawings.

2.07 PIPE CONNECTIONS TO MANHOLE

A. Sanitary Sewers

1. Provide resilient connectors conforming to requirements of ASTM C 923. Use the following materials for metallic mechanical devices as defined in ASTM C 923:

a. External clamps: Type 304 stainless steel

b. Internal, expandable clamps on standard manholes: Type 304 stainless steel, 11 gauge minimum.

c. Internal, expandable clamps on corrosion-resistant manholes:

1) Type 316 stainless steel, 11 gauge minimum
2) Type 304 stainless steel, 11 gauge minimum, coated with minimum 16 mil fusion-bonded epoxy conforming to AWWA C 213

2. Where rigid joints between pipe and cast-in-place manhole base are specified or shown on Drawings, provide polyethylene-isoprene water-stop meeting physical property requirements of ASTM C 923, such as Press-Seal WS Series, or approved equal.

B. Storm Sewer Connections:

1. Provide watertight connections in accordance with ASTM C 923 and ASTM F 2510 as applicable.

C. Water Lines

1. Where smooth exterior pipes, i.e., steel, ductile iron, or PVC pipes are connected to manhole base or barrel, seal space between pipe and manhole wall with assembly consisting of rubber gasket or links mechanically compressed to form a watertight barrier. Assemblies: Press-Wedge, Res-Seal, Thunderline Link-Seal, or approved equal. See Drawings for placement of assembly in manhole sections.

2. When connecting concrete or cement mortar coated steel pipes, or as option for connecting smooth exterior pipes to manhole base or barrel, space between pipe and manhole wall may be sealed with an assembly consisting of a stainless steel power sleeve, stainless steel -up clamp and a rubber gasket. Take-up clamp: Minimum of 9/16 inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket Corporation or approved equal.

2.08 SEALANT MATERIALS

A. Approved products in accordance with Section 01630 - Product Substitution Procedures.

B. Provide sealing materials between precast concrete adjustment ring and manhole cover frame, Adeka Ultraseal P201, or approved equal.

C. Provide approved external sealing material from Canusa Wrapid Seal manhole encapsulation system, or approved equal.

D. Provide Butyl Sealant: Provide Press-Seal EZ Stick, or equal, for HDPE rings.

2.09 CORROSION RESISTANT MANHOLE MATERIALS

A. Where corrosion-resistant manholes are indicated on Drawings, refer to City of Houston Approved Product List for liner and/or coating materials.

2.10 BACKFILL MATERIALS

A. Conform to requirements of Section 02317 - Excavation and Backfill for Utilities.

2.11 NON-SHRINK GROUT

A. Provide prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based grout requiring only addition of water.

B. Meet requirements of ASTM C 1107 and have minimum 28-day compressive strength of 7000 psi.

2.12 VENT PIPES

A. Provide external vent pipes for manholes where indicated on Drawings.

B. Buried Vent Pipes: Provide 3 inch or 4 inch PVC DWV pipe conforming to ASTM D2665. Alternatively, provide FRP pipe as specified for vent outlet assembly.

C. Vent Outlet Assembly: Provide vent outlet assembly as shown on Drawings, constructed of following specified materials:

1. FRP Pipe: Provide filament wound FRP conforming to ASTM D 2996 or centrifugally cast FRP conforming to ASTM D 2997. Seal cut ends in accordance with manufacturer's recommendations.

2. Joints and Fittings: Provide epoxy bodied fittings and join pipe to fittings with epoxy adhesive

3. Flanges: Provide socket-flange fittings for epoxy adhesive bonding to pipe ends where shown on Drawings. Meet bolt pattern and dimensions for ASME B 16.l, 125-pound flanges. Flange bolts shall be Type 304 stainless steel or hot-dip zinc coated, conforming to ASTM A 307, Class A or B.

4. Coating: Provide approved 2-component, aliphatic polyurethane coating using primer or tie coat recommended by manufacturer. Provide two or more coats to yield dry film thickness of at least 3 mils. Color shall be selected by Project Manager from manufacturer's standard colors.

## 2.13 PROHIBITED MATERIALS

A. Do not use brick masonry for construction of sanitary sewer manholes, including adjustment of manholes to grade. Use only specified materials listed above.

## 2.14 MANHOLE LADDER FOR WATERLINE MANHOLES

A. Manhole Ladder: Fiberglass with 300-lb rating at appropriate length; conform to requirements of Occupational Safety and Health Standards (OSHA), U.S. Department of Labor except where shown on Drawings:

1. Use components, including rungs, made of fiberglass, fabricated with nylon or aluminum rivets and/or epoxy. Apply non-skid coating to ladder rungs. Mount ladder using manufacturer's recommended hardware.

2. Provide ladder as manufactured by Saf-Rail or approved equal. Locate ladder as shown on Drawings.

3. Fiberglass: Premium type polyester resin, reinforced with fiberglass; constructed to provide complete wetting of glass by resin; resistant to rot, fungi, bacterial growth and adverse effects of acids, alkalis and residential and industrial waste; yellow in color.

B. Provide approved petroleum-based tape encapsulating bolts in access manhole.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that lines and grades are correct.

B. Determine if subgrade, when scarified and recompacted, can be compacted to 95 percent of maximum Standard Proctor Density, at ±3% optimum moisture content according to ASTM D 698 prior to placement of foundation material and base section. If it does not meet the moisture-density requirement, condition the subgrade until the required moisture-density requirement is met or treat as an unstable subgrade.

C. Do not build manholes in ditches, swales, or drainage paths unless approved by Project Manager.

### 3.02 PLACEMENT

A. Install precast manholes to conform to locations and dimensions shown on Drawings.

B. Place sanitary and storm manholes at points of change in alignment, grade, size, pipe intersections, and end of sewer unless otherwise shown on Drawings.

### 3.03 MANHOLE BASE SECTIONS AND FOUNDATIONS

A. Place precast base on 12 inch thick (minimum) foundation of crushed stone wrapped in filter fabric, cement stabilized sand, or concrete foundation slab. Compact cement-sand in accordance with requirements of Section 02321 - Cement Stabilized Sand.

B. Unstable Subgrade Treatment: When unstable subgrade is encountered, notify Project Manager for examination of subgrade to determine if subgrade has heaved upwards after being excavated. When heaving has not occurred, over-excavate subgrade to allow for 24-inch-thick layer of crushed stone wrapped in filter fabric as foundation material under manhole base. When there is evidence of heaving, provide pile-supported concrete foundation, as detailed on Drawings, under manhole base.

C. For manholes located over large diameter water lines , place precast base on a foundation of cement stabilized sand extending from bottom of manhole to bottom of trench. Manhole base is to be a minimum of 12-inches above water line.

### 3.04 PRECAST MANHOLE SECTIONS

A. Install sections, joints, and gaskets in accordance with manufacturer's printed recommendations.

B. Install precast adjustment rings above tops of cones or flat-top sections as required to adjust finished elevation and to support manhole frame.

C. Seal any lifting holes with non-shrink grout.

D. Where PVC liners are required, seal joints between sections in accordance with manufacturer's recommendations.

E. Place at least two precast concrete grade rings with thickness of 12 inches or less, under casting.

3.05 PIPE CONNECTIONS AT MANHOLES

A. Install approved resilient connectors at each pipe entering and exiting manholes in accordance with manufacturer's instructions.

1. Where smooth exterior pipes, i.e. steel, ductile iron or PVC pipes are connected to manhole base or barrel, space between pipe and manhole wall shall be sealed with an assembly consisting of rubber gaskets or links mechanically compressed to form watertight. Assemblies: "Press-Wedge," "Res-Seal," "Thunderline Link-Seals," or approved equal. See Drawings for placement of assembly in manhole sections.

2. When connecting concrete or cement mortar coated steel pipes, or as an option for connecting smooth exterior pipes to manhole base or barrel, space between pipe and manhole wall may be sealed with an assembly consisting of stainless steel power sleeve, stainless steel take-up clamp and rubber gasket. Take-up clamp: Minimum of 9/16 inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket Corporation or approved equal.

B. Grout storm sewer connections to manhole unless otherwise shown on Drawings. Grout pipe penetration in place on both inside and outside of manhole.

C. Ensure no concrete, cement stabilized sand, fill, or other rigid material is allowed to enter space between pipe and edge of wall opening at and around resilient connector on either interior or exterior of manhole. If necessary, fill space with compressible material to ensure full flexibility provided by resilient connector.

D. Where new manhole is constructed on existing sewer, rigid joint pipe may be used. Install waterstop gasket around existing pipe at center of cast-in-place wall. Join ends of split waterstop material at pipe springline using an adhesive recommended and supplied by waterstop manufacturer.

E. Test connection for watertight seal before backfilling.

3.06 INVERTS FOR SANITARY SEWERS

A. Construct invert channels to provide smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:

1. Slope of invert bench: 1 inch per foot minimum; 1-1/2 inches per foot maximum

2. Depth of bench to invert:

a. Pipes smaller than 15 inches: one-half of largest pipe diameter

b. Pipes 15 to 24 inches: three-fourths of largest pipe diameter

c. Pipes larger than 24 inches: equal to largest pipe diameter

3. Invert slope through manhole: 0.10 foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on Drawings.

B. Form invert channels with concrete if not integral with manhole base section. For direction changes of mains, construct channels tangent to mains with maximum possible radius of curvature. Provide curves for side inlets and smooth invert fillets for flow transition between pipe inverts.

3.07 DROP CONNECTIONS FOR SANITARY SEWERS

A. Backfill drop assembly with crushed stone wrapped in filter fabric, cement stabilized sand, or Class A concrete to form solid mass. Extend cement stabilized sand or concrete encasement minimum of 4 inches outside bells.

B. Install drop connection when sewer line enters manhole higher than 24 inches above invert of manhole.

3.08 STUBS FOR FUTURE CONNECTIONS

A. In manholes, where future connections are indicated on Drawings, install resilient connectors and pipe stubs with approved watertight plugs.

3.09 MANHOLE FRAME AND ADJUSTMENT RINGS

A. Combine precast concrete or HDPE adjustment rings so elevation of installed casting cover matches pavement surface. Seal between concrete adjustment ring and precast top section with non-shrink grout; do not use mortar between adjustment rings. Apply latex-based bonding agent to precast concrete surfaces joined with non-shrink grout. Set cast iron frame

on adjustment ring in bed of approved sealant material. Install sealant bed consisting of two beads of sealant, each bead having minimum dimensions of 1/2-inch and 1/2-inch wide.

B. Wrap manhole frame and adjustment rings with external sealing material, minimum 3 inches beyond joint between ring and frame and adjustment rings and precast section.

C. For manholes in unpaved areas, set top of frame minimum of 6 inches above existing ground line unless otherwise indicated on Drawings. In unpaved areas, encase manhole frame in mortar or non-shrink grout placed flush with face of manhole ring and top edge of frame. Provide rounded corner around perimeter.

3.10 BACKFILL

A. Place and compact backfill materials in area of excavation surrounding manholes in accordance with requirements of Section 02317 - Excavation and Backfill for Utilities. Provide embedment zone backfill material, as specified for adjacent utilities, from manhole foundation up to an elevation 12 inches over each pipe connected to manhole. Provide trench zone backfill, as specified for adjacent utilities, above embedment zone backfill.

B. Where rigid joints are used for connecting existing sewers to manhole, backfill under existing sewer up to springline of pipe with Class B concrete or flowable fill.

C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Provide minimum of 4 inches of topsoil conforming to requirements of Section 02911 - Topsoil. Seed in accordance with Section 02921 - Hydromulch Seeding. When shown on Drawings, sod disturbed areas in accordance with Section 02922 - Sodding.

3.11 FIELD QUALITY CONTROL

A. Conduct leakage testing of sanitary sewer manholes in accordance with requirements of Section 02533 - Acceptance Testing for Sanitary Sewers.

3.12 PROTECTION

A. Protect manholes from damage until work has been accepted. Repair damage to manholes at no additional cost to City.

END OF SECTION

Section 02084

# FRAMES, GRATES, RINGS, AND COVERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Iron castings for manhole frames and covers, inlet frames and grates, catch basin frames and grates, meter vault frames and covers, adjustment rings, and extensions.

B. Ring grates.

C. Trench Drainage

D. Tree Grates

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No payment will be made for frames, grates, rings, covers, and seals under this Section. Include payment in unit price for related item.

2. Payment to rack over existing manhole is on a unit price basis for each manhole.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. AASHTO - American Association of State Highway and Transportation Officials

1. Standard Specification for Highway Bridges

2. M306: Drainage, Sewer, Utility, and Related Castings

3. M105: Gray Iron Castings

B. ASTM A 48 - Standard Specification for Gray Iron Castings

C. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

D. AWS - D 12.1 Welding Reinforcing Steel.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit copies of manufacturer's specifications, load tables, dimension diagrams, anchor details, and installation instructions.

C. Submit shop drawings for fabrication and installation of casting assemblies that are not included in Drawings or standard City of Houston details. Include plans, elevations, sections and connection details. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.

PART 2 PRODUCTS

2.01 CASTINGS

A. All castings shall be made from gray cast iron conforming to the requirements of AASHTO M105 class 35b.

B. Castings intended for traffic service shall be clean castings capable of withstanding an application of 40,000 pound proof load as described in Section 5 of AASHTO M306 (includes items such as frames, grates, rings, covers, trench drainage, etc.)

C. Fabricate castings to conform to shapes, dimensions, and with wording or logos shown on Drawings.

D. All castings shall be manufactured in accordance with the requirement of Section 4 of AASHTO M306.

E. Unless otherwise indicated, all castings shall be provided uncoated.

F. Each individual casting shall include all markings as shown on the specification drawings and shall be identified by the producing foundry showing the following: Name of producing foundry; country of manufacturer preceded by the words "Made in," such as "Made in USA"; material designation, heat identification and cast date (MM/DD/YY), casting lettering as required by the purchaser. If a casting is melted and poured at one foundry and labeled with the name of another organization, manufacturer, or foundry the casting shall include the name of the producing foundry and the organization the casting is produced for. The name of the producing foundry and the organization the product is made for shall have lettering of

equal size, be in close proximity to each other, and be easily identified from the same side of the casting. The casting shall also include any additional markings as required in Section 9 of AASHTO M306 and Section 17 of AASHTO M105.

2.02 TESTING REQUIREMENTS

A. Testing shall be performed in accordance with the following inspection criteria unless otherwise specified in the contract or purchase order. The manufacturer/supplier shall be responsible for carrying out all of the required tests and inspections. All testing shall be conducted in the United States using purchaser approved reliable facilities. The manufacturer/supplier shall maintain complete records of all such tests and inspections. All testing shall be paid for by the manufacturer/supplier. If the producing foundry is located within the United States and operates in accordance with an approved Quality System they shall conduct testing in accordance with Subsection B. All others shall conduct testing in accordance with subsection C.

B. The manufacturer shall report and certify material information obtained from separately cast test bars. If there are more than three test bar failures in a calendar year the manufacturer shall report this to the purchaser and shall discontinue supplying product. In order to resume supplying product, documentation that a new Quality System is in place to ensure material compliance must be submitted to and accepted by the purchaser. The manufacturer may also supply under subsection C.

C. A test bar for determining the class of iron shall be cast on each casting in a place where it can be easily broken off with a breakage pattern remaining on the member. Test bars shall be of sufficient size in order to produce a machined test specimen complying with the dimension requirement for a Type B test bar as shown in AASHTO M105. For lots of 15 castings or less 30% of test bars shall be tested. For lot sizes between 16 to 100, 10% or a minimum of 5 test bars shall be tested. For lots greater than 100, 10% of all bars shall be tested. All castings for testing shall be selected at random. All castings that have a test bar removed shall also be inspected for dimensional and mass requirements. If any casting fails the material, dimension, or mass inspection that casting will be rejected and destroyed. In order for the remaining castings in the lot to be accepted, all castings in the lot shall be tested and need to meet the material, dimensional, and mass requirements. If any additional casting fails, the entire lot shall be rejected and destroyed. If the purchaser elects to select a casting for verification of test results, the member shall be furnished by the supplier at no cost to the purchaser.

2.03 SPECIAL FRAMES AND COVERS

A. Where indicated on Drawings, provide watertight manhole frames and covers with minimum of four bolts and gasket designed to seal cover to frame. Supply approved watertight manhole covers and frames.

B. Where shown on Drawing, provide manhole frames and covers with 48 inch diameter clear opening, with inner cover for 22 inch diameter clear opening. Provide approved inner cover with pattern shown on Drawings.

2.04 FABRICATED RING GRATES

A. Fabricate ring grates from reinforcing steel conforming to ASTM A 615.

B. Conform to welds connecting bars to AWS D 12.1.

2.05 ADJUSTMENT RINGS FOR ASPHALT OVERLAYS

A. Use castings conforming Section 2.01.

B. One piece casting with dimensions to fit frame and cover.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install castings according to approved shop drawings, instructions in related specifications, and applicable directions from manufacturer's printed materials.

B. Set castings accurately at required locations to proper alignment and elevation. Keep castings plumb, level, true, and free of rack. Measure location accurately from established lines and grades. Brace or anchor frames temporarily in form work until permanently set.

C. Fabricate ring grates in accordance with City of Houston standard detail, "Ring Grate for Open End of 18 Inch to 72 Inch Stubs to Ditch". Set in mortar in mouth of pipe bell.

D. Install adjustment rings in existing frames with clean bearing surfaces that are free from rocking.

END OF SECTION

Section 02085

# VALVE BOXES, METER BOXES, AND METER VAULTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Valve boxes for water service.

B. Meter boxes for water service.

C. Meter vaults for water service.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for valve boxes under this Section. Include payment in unit price for Section 02511 - Water Lines.

2. No separate payment will be made for meter boxes under this Section. Include payment in unit price for Section 02512 - Water Tap and Service Line Installation.

3. Payment for each size of meter vaults is on unit price basis per vault. Payment will be made for each vault installed, regardless of depth.

4. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM A 48 - Standard Specification for Gray Iron Castings.

B. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.

C. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.

D. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.

E. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

F. ASTM D 2240 - Standard Test Method for Rubber Property-Durometer Hardness.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturers' product data for following items for approval:

1. Each type of valve box and lid.

2. Each type of meter box and cover.

3. Each type of meter vault frame and cover.

C. Submit design calculations and shop drawings for precast vault elements, sealed by an Engineer registered in State of Texas.

D. Submit shop drawings for cast-in-place meter vaults for approval if proposed construction varies from City of Houston Detail Drawings.

E. Submit manufacturer's certification that plastic meter boxes meet requirements of Paragraph 2.05, Plastic Meter Boxes.

PART 2 PRODUCTS

2.01 VALVE BOXES

A. Provide approved Type A, cast-iron/ductile-iron, slide-type, valve boxes. Design of valve box shall minimize stresses on valve imposed by loads on box lid.

B. Cast letter "W" into lid, 1/2 inch in height and raised 3/32 inch, for valves serving potable water lines.

C. Unless otherwise specified, uncoated cast iron.

D. Riser Pipe.

1. Provide 6-inch PVC, DR 18, riser pipes in accordance with Section 02506 - Polyvinyl Chloride Pipe or

2. 6-inch ductile-iron, thickness Class 51 riser pipes in accordance with Section 02501 – Ductile Iron Pipe and Fittings.

3. Provide single section of pipe.

E. Concrete for valve box placement:

1. For locations in new concrete pavement, provide strength and mix design of new pavement.

2. For other locations, provide concrete for sidewalks conforming to requirements of Section 02751 - Concrete Paving.

2.02 METER BOXES

A. Provide meter boxes for 5/8-inch through 1-inch meters of the following materials:

1. Non-traffic bearing locations: Cast iron, concrete or plastic.

2. Traffic bearing locations: Cast iron.

B. Provide meter boxes for 1 1/2-inch and 2-inch meters of cast iron.

C. Provide meter box with reading lid. Provide lids with spring-type latching devices. Lids shall contain sufficient metal that meter box can be easily located with metal detector. Cast words "CITY OF HOUSTON" and "WATER METER" into lid with letters of 1/2-inch height and raised 3/32 inch.

D. Meter box dimensions shall conform to the following approximate dimensions:

1. Length: At top – 15 1/2 inches; at bottom 20 inches

2. Width: At top – 12 1/2 inches; at bottom 14 3/4 inches

3. Height: 12 inches

E. Extensions: Meter box extensions 3 inches and 6 inches in height shall be available from manufacturer as standard item.

2.03 CAST-IRON METER BOXES

A. Cast-Iron Boxes: Clean and free from sand blow-holes or other defects conforming to requirements of ASTM A 48, Class 30B. Bearing surfaces shall be machined so that covers seat evenly in frames.

B. Boxes and lids shall have dipped, coal-tar-pitch, varnish finish.

C. Provide lock-type meter boxes when required by Drawings. Lock mechanisms shall work with ease.

2.04 CONCRETE METER BOXES

A. Concrete Meter Boxes: Made of Class A concrete, with minimum 4000 psi compressive strength, conforming to requirements of Section 03315 - Concrete for Utility Construction. Construct to dimensions shown on Drawings.

B. Castings: Free from fractures, large or deep cracks, blisters or surface roughness or any other defects that may affect serviceability.

2.05 PLASTIC METER BOXES

A. Plastic Meter Boxes: Made of high density polyethylene conforming to the following ASTM standards:

| ASTM | REQUIREMENT |
|---|---|
| D 256 | Impact Strength = 1.9 ft.-lb./inch (Izod, Notched) |
| D 256 | Impact Strength = 6.4 ft.-lb./inch (Izod, Un-Notched) |
| D 638 | Tensile Strength (2.0 min.) = 3400 psi |
| D 648 | Deflection Temperature = 170 degrees F |
| D 2240 | Shore D, Hardness, 55-65 Impact Strength, Falling Dart Method, 160 inch-lb. |
| D 790 | Flexural Modulus = 90,000 psi |

B. Meter boxes shall meet the following test requirements:

1. Static Load: Not less than 2500 pounds using 6-inch disc with direct compression exerted at center of top of meter box with solid plastic lid.

2. Deflection: Not less than 1000 pounds load required to deflect top edge of meter box 1/8- inch.

C. Meter box body, without lid, shall weigh approximately 7 pounds.

2.06 METER VAULTS

A. Meter vaults may be constructed of precast concrete, cast-in-place concrete to the specified dimensions in the City of Houston Detail Drawings.

B. Concrete for Meter Vaults: Class A concrete, conforming to requirements of Section 03315 - Concrete for Utility Construction with minimum compressive strength of 4000 psi at 28 days.

C. Reinforcing steel for meter vaults: Conform to requirements of Section 03315 Concrete for Utility Construction.

D. Grates and Covers: Conform to requirements of Section 02084 - Frames, Grates, Rings, and Covers.

PART 3 EXECUTION

3.01 EXAMINATION

A. Obtain approval from Project Manager for location of meter vault.

B. Verify lines and grade are correct.

C. Verify compacted subgrade will support loads imposed by vaults.

3.02 VALVE BOXES

A. Install riser pipe with suitable length for depth of cover indicated on Drawings or to accommodate actual finish grade.

1. Install with bell on top of valve

2. Place riser pipe in plumb, vertical position

B. Install valve box and riser piping plumbed in a vertical position. Provide 6-inches telescoping freeboard space between riser pipe top butt end, and interior contact flange of valve box, for vertical movement damping. End of pipe resting on valve shall be notched out sufficiently to provide a snug fit around the valve bonnet and to center valve inside of pipe.

C. Set, align, and adjust valve box so that lid is level with final grade.

D. Paint covers of new valve boxes in fluorescent orange when installed. After completion and acceptance by City, repaint covers black.

3.03 METER BOXES

A. Install cast iron or plastic boxes in accordance with manufacturer's instructions.

B. Construct concrete meter boxes to dimensions shown on City of Houston Detail Drawings.

C. Adjust top of meter boxes to conform to cover elevations specified in Paragraph 3.05, Frame and Cover for Meter Vaults.

D. Do not locate under paved areas unless approved by Project Manager. Use approved traffic-type box with cast iron lid when meter must be located in paved areas.

3.04 METER VAULTS

A. Construct concrete meter vaults to dimensions shown on City of Houston Detail Drawings. Do not cast in presence of water. Make bottom uniform. Verify lines and grades are correct and compacted subgrade will support loads imposed by vaults. Interior meter vault depth is not allowed to exceed more than 4 feet unless approved by OCE.

B. Precast Meter Vaults:

1. Install precast vaults in accordance with manufacturer's recommendations. Set level on a minimum 3-inch-thick bed of sand conforming to requirements of Section 02320 - Utility Backfill Materials.

2. Seal lifting holes with cement-sand mortar or non-shrink grout.

C. Meter Vault Floor Slab:

1. Construct floor slabs of 6-inch-thick reinforced concrete. Slope floor 1/4 inch per foot toward sump. Make sump 12 inches in diameter, or 12 inches square, and 4 inches deep, unless other dimensions are required by Drawings. Install dowels at maximum of 18 inches, center-to-center for keying walls to floor slab.

2. Precast floor slab elements may be used for precast vault construction

D. Cast-in-Place Meter Vault Walls:

1. Key walls to floor slab and form to dimensions shown on Drawings. Minimum wall thickness shall be 4 inches.

2. Cast walls monolithically. One cold joint will be allowed when vault depth exceeds 12 feet.

3. Set frame for cover in concrete

3.05 FRAME AND COVER FOR METER VAULTS

A. Set cast iron frame in a mortar bed and adjust elevation of cover as follows:

1. In unpaved areas, set top of meter box or meter vault cover 2 to 3 inches above natural grade

2. In paved areas, set top of meter box or meter vault cover flush with adjacent concrete but no higher than 1/2-inch

3.06 BACKFILL

A. Provide bank run sand in accordance with Section 02320 - Utility Backfill Materials and backfill and compact in accordance with Section 02317 - Excavation and Backfill for Utilities.

B. In unpaved areas, slope backfill around meter boxes and vaults to provide a uniform slope 1-to-5 slope from top to natural grade.

C. In paved areas, slope concrete down from meter box or vault to meet adjacent paved area.

END OF SECTION

Section 02086

# ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Adjusting elevation of manholes, inlets, and valve boxes to new grades.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for adjusting manhole frames and covers, inlets, valve boxes, and meter boxes to grade for new construction under this Section. Include payment in unit price for related item.

2. Payment for adjusting existing manholes,frame and cover, inlets, valve boxes, and meter boxes to a new grade is on a unit price basis for each.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

## PART 2 PRODUCTS

### 2.01 CONCRETE MATERIALS

A. Provide concrete, conforming to requirements of Section 03315 - Concrete for Utility Construction.

B. Provide precast concrete manhole sections and adjustment rings conforming to requirements of Section 02082 - Precast Concrete Manholes.

C. Provide mortar conforming to requirements of Section 04061 - Mortar.

### 2.02 CAST-IRON MATERIALS

A. Provide cast-iron materials conforming to requirements of Section 02084 - Frames, Grates, Rings, and Covers.

2.03 PIPING MATERIALS

A. For riser pipes and fittings, refer to Sections 02501 - Ductile-iron Pipe and Fittings through 02528 - Polyethylene Wrap.

2.04 MASONRY MATERIALS FOR STORM SEWER MANHOLES AND INLETS

A. Provide brick masonry units conforming to the requirements of Section 04210 - Brick Masonry for Utility Construction.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine existing structure, valve box, frame and cover or inlet box, frame and cover or inlet, piping and connections for damage or defects affecting adjustment to grade. Report damage or defects to Project Manger.

3.02 ESTABLISHING GRADE

A. Coordinate grade related items with existing grade and finished grade or paving, and relate to established bench mark or reference line.

3.03 ADJUSTING MANHOLES AND INLETS

A. Rebuild adjustment portion of manhole or inlet by adding or removing Adjustments. Follow procedures for the type of structure being adjusted detailed in the following Sections:

1. Section 02081 - Cast-In-Place Concrete Manholes
2. Section 02082 - Precast Concrete Manholes
3. Section 02083 - Fiberglass Manholes
4. Section 02087 - Brick Manholes for Storm Sewers
5. Section 02632 - Cast-In-Place Inlets, Headwalls and Wingwalls
6. Section 02633 - Precast Concrete, Inlets, Headwalls and Wingwalls

B. Salvage and reuse cast-iron frame and cover or grate.

C. Protect or block off manhole or inlet bottom using wood forms shaped to fit so that no debris or soil falls to bottom during adjustment.

D. Verify that manholes and inlets are free of visible leaks as result of reconstruction. Repair leaks in manner subject to Project Manger's approval.

3.04 ADJUSTING VALVE BOXES

A. Salvage and reuse valve box and surrounding concrete block as approved by Project Manger. No separate pay.

B. Remove and replace 6 inch ductile iron riser pipe with suitable length for depth of cover required to establish adjusted elevation to accommodate actual finish grade.

C. Reinstall valve box and riser piping plumbed in vertical position. Provide minimum 6 inches telescoping freeboard space between riser pipe top butt end and interior contact flange of valve box for vertical movement damping.

D. After valve box has been set, aligned, and adjusted so that top lid is level with final grade.

3.05 BACKFILL AND GRADING

A. Backfill area of excavation surrounding each adjusted manhole, inlet, and valve box and compact according to requirements of Section 02316 - Excavation and Backfill for Structures.

B. Grade ground surface to drain away from each manhole and valve box. Place earth fill around manholes to level of upper rim of manhole frame. Place earth fill around valve box concrete slab.

C. In unpaved areas, grade surface at uniform slope of 1 to 5 from manhole frame to natural grade. Provide minimum of 4 inches of topsoil conforming to requirements of Section 02911 - Topsoil. Provide seeding in accordance with Section 02921 - Hydro-mulch Seeding, or if sodding in accordance with Section 02922 - Sodding.

END OF SECTION

Section 02087

# BRICK MANHOLE FOR STORM SEWERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Brick masonry Work in utility construction for permanent or temporary installation of storm water manholes or vaults.

B. Brick masonry in repair and rehabilitation of storm water lines and associated structures.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for brick manholes is on a unit price basis for each manhole installed.

2. No payment will be made for brick masonry work for repair and rehabilitation of storm water lines. Include payment in unit price for applicable utility structure section.

3. Refer to Section 01270 - Measurement and Payment for Unit Price Procedures.

B. Stipulated Price (Lump Sum). When Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM D 698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft$^3$ (600kN-m/m$^3$)).

### 1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit certifications required by Section 04061 - Mortar.

C. Submit certifications required by Section 04210 - Brick Masonry Utility Construction.

### 1.05 HANDLING AND STORAGE

A. Handle and store brick to prevent damage.

B. Store brick and mortar mix off ground and dry. Cover mortar mix to protect from weather.

## PART 2 PRODUCTS

### 2.01 BRICK MASONRY UNITS

A. Manhole bricks not exposed to flow.

1. Clay and shale brick masonry units conforming to requirements of Section 04210 - Brick Masonry for Utility Construction.

2. Concrete brick masonry units conforming to requirements of Section 04210 - Brick Masonry for Utility Construction.

B. Sewer brick. Clay and shale brick masonry units conforming to requirements of Section 04210 - Brick Masonry for Utility Construction.

### 2.02 MORTAR

A. Conform to requirements of Section 04061 - Mortar.

### 2.03 CONCRETE AND REINFORCING STEEL

A. Conform to requirements of Section 03315 - Concrete for Utility Construction.

B. Provide Class A concrete with minimum compressive strength of 4000 psi unless otherwise indicated on Drawings.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify lines and grades are correct.

B. Determine if subgrade, when scarified and recompacted, can be compacted to be 95 percent of maximum Standard Proctor Density according to ASTM D 698 prior to placement of foundation material and base section. When it cannot be compacted to that density, moisture condition subgrade until that density is reached or treat as unstable subgrade.

C. Do not build manholes in ditches, swales, or drainage paths unless approved by Project Manger.

3.02 MANHOLES

A. Construct manholes to dimensions shown on Drawings. Commence construction as soon as possible after pipes are laid. On monolithic sewers, construct manholes at same time sewer is being constructed.

B. Unstable Subgrade Treatment: When unstable subgrade is encountered, notify Project Manger for examination of subgrade to determine if subgrade has heaved upwards after being excavated. When heaving has not occurred, over-excavate subgrade to allow for 24-inch-thick layer of crushed stone wrapped in filter fabric as foundation material under manhole base. When there is evidence of heaving, provide pile-supported concrete foundation, as detailed on Drawings, under manhole base.

C. Construct manhole on concrete slab in accordance with requirements of Section 04210 - Brick Masonry for Utility Construction.

3.03 PIPE CONNECTIONS

A. Use non-shrink grout to seal pipe connections to manholes unless otherwise shown on Drawings.

3.04 FRAME AND COVER

A. Install frame and cover in accordance with Section 02084 - Frame, Grates, Rings, and Covers.

3.05 BACKFILL

A. Place and compact backfill materials in area of excavation surrounding manholes in accordance with requirements of Section 02316 - Excavation and Backfill for Structures. Use embedment zone backfill material for adjacent utilities, as shown in City of Houston Standard Details over each pipe connected to manhole. Provide trench zone backfill, as specified for adjacent utilities, above embedment zone backfill.

B. Backfill under existing sewer up to springline of pipe with Class B concrete or flowable fill in accordance with Section 03315 - Concrete for Utility Construction.

C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Provide minimum of 4 inches of topsoil conforming to requirements of Section 02911 - Topsoil. Seed in accordance with Section 02921 - Hydromulch Seeding, or sod disturbed areas in accordance with Section 02922 - Sodding.

3.06 FIELD QUALITY CONTROL

A. Visually inspect manhole for leakage.

3.07 PROTECTION

A. Protect manholes from damage until subsequent work has been accepted. Repair or replace damaged elements of manholes at no additional cost to City.

END OF SECTION

SUPPLEMENTARY SPECIFICATION

Section 02221- (S)

REMOVING EXISTING PAVEMENTS AND STRUCTURES

The following supplement modifies Specification Section 02761. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.

Part 1. Paragraph 1.02 A – replace line 2 to read as follows:

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

2. Payment for removing and disposing of reinforced concrete pavement, with or without asphalt overlay, regardless of thickness, is on a square yard basis. Payment for esplanade curbs, curbs, curb and gutters are on a per linear foot basis.

Part 1. Paragraph 1.02 A – replace line 7 to read as follows:

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

7. Payment for removing and disposing of pipe culverts equals to or less than twenty-four inches in diameter is on linear foot basis, regardless of diameter or material. Payment for removing and disposing of pipe culverts greater than twenty-four inches in diameter, sewers, and sewer leads is on linear foot basis for each diameter and each material type removed.

END OF SUPPLEMENT

Approved by:

Frank O. Simoneaux, Jr., P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

8-28-09
Date

Section 02221

# REMOVING EXISTING PAVEMENTS, STRUCTURES, WOOD, AND DEMOLITION DEBRIS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Removing concrete paving, asphaltic concrete pavement, brick pavement and base courses.

B. Removing concrete curbs, concrete curbs and gutters, sidewalks and driveways.

C. Removing pipe culverts, sewers, and sewer leads.

D. Removing waterlines and water services lines including asbestos cement pipe per OSHA guidelines.

E. Removing existing inlets and manholes.

F. Removing and disposing of pre-stressed concrete beams and drill shafts.

G. Removing miscellaneous structures of concrete or masonry.

H. Removing existing bridge.

I. Removing existing wood and demolition debris.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for removing and disposing of asphaltic surfacing with or without base, regardless of thickness encountered, is on square yard basis measured between lips of gutters.

2. Payment for removing and disposing of reinforced concrete pavement, with or without asphalt overlay, regardless of its thickness, is on square yard basis measured from back-to-back of curbs. Payment includes concrete pavement, esplanade curbs, curbs and gutters, and paving headers.

3. Payment for removing and disposing of cement stabilized shell base course, with or without asphaltic surfacing, is on square yard basis.

4. Payment for removing and disposing of concrete sidewalks and driveways is on square yard basis.

5. Payment for removing asphaltic pavement surface by milling shall be in accordance with Section 2960.

6. Payment for removing and disposing of miscellaneous concrete and masonry is on cubic yard basis of structure in place.

7. Payment for removing and disposing of pipe culverts, sewers, and sewer leads, is on linear foot basis for each diameter and each material type of pipe removed.

8. Payment for removing and disposing of waterlines and water service lines including asbestos cement pipe is on linear foot basis for each diameter pipe and each material type of pipe removed.

9. Payment for removing and disposing of existing inlets is on unit price basis for each inlet removed.

10. Payment for removing and disposing of prestressed concrete piles and drill shafts is on linear foot basis.

11. Payment for removing and disposing of existing bridge, including piles and abutments to minimum of 4 feet below ground level, is on a lump sum basis.

12. Payment for removing and disposing of existing manholes is on unit price basis for each manhole removed.

13. Payment for removing and disposing of miscellaneous wood and demolition debris is on cubic yard basis.

14. No payment for saw cutting of pavement, curbs, or curbs and gutters will be made under this section. Include cost of such work in unit prices for items listed in bid form requiring saw cutting.

15. No payment will be made for work outside maximum payment limits indicated on Drawings, or for pavements or structures removed for Contractor's convenience.

    a. For utility installations: Match actual pavement replaced but no greater than maximum pavement replacement limits shown on Drawings. Limits of measurement will be as shown on Street Cut Pavement Replacement Rules.

16. Refer to Section 01270 - Measurement and Payment for unit price procedures

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.1.03 REGULATORY REQUIREMENTS

A. Conform to applicable codes for disposal of debris.

B. Coordinate removal work with utility companies.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Obtain advance approval from Project Manager for dimensions and limits of removal work.

B. Identify known utilities below grade. Stake and flag locations.

3.02 PROTECTION

A. Protect following from damage or displacement:

1. Adjacent public and private property.

2. Trees, plants, and other landscape features designated to remain.

3. Utilities designated to remain.

4. Pavement and utility structures designated to remain.

5. Bench marks, monuments, and existing structures designated to remain.

3.03 REMOVALS

A. Remove pavements and structures by methods that will not damage underground utilities. Do not use drop hammer near existing underground utilities.

B. Minimize amount of earth loaded during removal operations.

C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut to minimum depth of 2 inches.

D. When street and driveway saw cut location is greater than one-half of pavement lane width, remove pavement for full lane width or to nearest longitudinal joint as directed by Project Manager.

E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.

F. Where existing end of pipe culvert or end of sewer is to remain, install 8-inch-thick masonry plug in pipe end prior to backfill in accordance with requirements of Section 02316 - Excavation and Backfill for Structures.

3.04 BACKFILL

A. Backfill of removal areas shall be in accordance with requirements of Section 02316 - Excavation and Backfill for Structures.

3.05 DISPOSAL

A. Inlet frames, grates, and plates; and manhole frames and covers, may remain City property. Disposal shall be in accordance with requirements of Section 01576 - Waste Material Disposal.

B. Remove from site, debris resulting from work under this section in accordance with requirements of Section 01576 - Waste Material Disposal.

END OF SECTION

Section 02233

# CLEARING AND GRUBBING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Removing surface debris and rubbish.

B. Clearing site of plant life and grass.

C. Removing trees and shrubs.

D. Removing root system of trees and shrubs.

E. Fence removal.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for clearing and grubbing is on per acre basis.

2. No separate payment will be made for clearing and grubbing of wastewater projects, include payment in unit prices for related items.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REGULATORY REQUIREMENTS

A. Conform to applicable codes for disposal of debris.

B. Coordinate clearing work with utility companies.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are identified and tagged.

### 3.02 PROTECTION

A. Protect following from damage or displacement:

1. Living trees located 3 feet or more outside of intersection of side slopes and original ground line.

2. Plants other than trees and landscape features designated to remain.

3. Utilities designated to remain.

4. Bench marks, monuments, and existing structures designated to remain.

### 3.03 CLEARING

A. Remove stumps, main root ball, and root system to:

1. Depth of 24 inches below finished subgrade elevation in area bounded by lines two feet behind back of curbs.

2. Depth of 24 inches below finished surface of required cross section for other areas.

B. Clear undergrowth and deadwood without disturbing subsoil.

C. Remove vegetation from top soil scheduled for reuse.

### 3.04 REMOVAL

A. Remove debris, rubbish, and extracted plant material life from site in accordance with requirements of Section 01576 - Waste Material Disposal.

B. Remove on site fences. Materials generated from removal of fences become property of Contractor. Properly dispose of in accordance with applicable local, state and federal laws.

END OF SECTION

Section 02315

# ROADWAY EXCAVATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Excavation and compaction of materials for roadways.

B. Excavation and compaction of materials for roadside ditches.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for roadway excavation, with or without subgrade, is on cubic yard basis. Unless specified otherwise under the borrow (off-site) material or embankment fill work item, measurement for payment shall be based on the cut quantity shown on the drawing.

2. No payment will be made for material excavated under the following conditions:

   a. More than 2 feet outside of vertical planes behind back of curbs

   b. For portion within limits of trench for utilities 24-inch and greater constructed by open-cut methods

   c. As indicated otherwise on Drawings.

3. Measurement for the bid item "Regrade Ditches" is on a linear foot basis. No separate payment will be made for reshaping and regrading roadway ditch shoulder slope and side slope adjacent to installed temporary pavement upon removal of temporary pavement.

4. If specified, off-site borrow material including placement and compaction will be paid by final in-place quantity on cubic yard basis.

5. If specified and shown on the drawing, embankment fill including placement and compaction will be paid by final in-place quantity on cubic yard basis.

6. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM D 698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12.44 ft-lbf/ft$^3$).

B. ASTM D 2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

C. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).D. ASTM D 3017 - Standard Test Method for Water content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

E. ASTM D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Provide topsoil conforming to requirements of Section 02911 - Topsoil.

B. Provide backfill which is excavated material, graded free of roots, lumps greater than 6 inches, rocks larger than 3 inches, organic material, and debris.

C. Provide structural backfill which is select material meeting following requirements:

1. Plasticity index: not less than 12 nor more than 20.

2. Maximum liquid limit: 45

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Identify required lines, levels, and datum. Coordinate with Section 01725 - Field Surveying.

B. Identify and flag surface and aerial utilities.

C. Notify utility companies to remove or relocate utilities.

D. Identify, stake, and flag known utility locations below grade. Make temporary or permanent relocation of underground pipes, ducts, or utilities where indicated on Drawings.

E. Upon discovery of unknown or badly deteriorated utilities, or concealed conditions, discontinue work. Notify Project Manager and obtain instructions before proceeding in such areas.

F. Obtain approval of top soil quality before excavating and stockpiling.

3.02 PROTECTION

A. Protect following from damage or displacement:

1. Trees, shrubs, lawns, existing structures, and other features outside of grading limits.

2. Utilities either above or below grade, which are to remain.

3.03 TOPSOIL REMOVAL

A. Strip off topsoil from area to be excavated to minimum depth of 6 inches, unless indicated otherwise on Drawings.

B. Stockpile topsoil in designated location for reuse. Stockpile topsoil to depth not exceeding 8 feet. Cover to protect from erosion.

3.04 SOIL EXCAVATION

A. Excavate to lines and grades shown on Drawings.

B. Remove unsuitable material not meeting specifications. Backfill with embankment materials and compact to requirements of Section 02330 - Embankment.

C. Record location and plug and fill inactive water and oil wells. Conform to Texas Department of Health, Texas Natural Resource Conservation Commission, and Texas Railroad Commission requirements. Notify Project Manager prior to plugging wells.

D. At intersections, grade back at minimum slope of one inch per foot. Produce smooth riding junction with intersecting street. Maintain proper drainage.

E. When area is inadvertently over excavated, fill area in accordance with requirements of Section 02330 - Embankment at no additional cost to City.

F. Remove material not qualified for use and excess soil not being reused from site in accordance with requirements of Section 01576 - Waste Material Disposal.

3.05 COMPACTION

A. Maintain optimum moisture content of subgrade to attain required density.

B. Compact to following minimum densities at moisture content of optimum to 3 percent above optimum as determined by ASTM D 698, unless otherwise indicated on Drawings:

1. Areas under future paving and shoulders: Minimum density of 95 percent of maximum dry density.

2. Other areas: Minimum density of 90 percent of maximum dry density.

3.06 TOLERANCES

A. Top of Compacted Surface: Plus or minus 1/2 inch in cross section, or in 16-foot length.

3.07 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01454 - Testing Laboratory Services.

B. Test and analysis of soil materials will be performed in accordance with ASTM D 4318, ASTM D 2216, and ASTM D 698.

C. Compaction testing will be performed in accordance with ASTM D 698 or ASTM D 2922 and ASTM D 3017.

D. A minimum of three tests will be taken for each 1000 linear feet per lane of roadway.

E. When tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at no additional cost to City.

3.08 PROTECTION

A. Prevent erosion at all times. Maintain ditches and cut temporary swales to allow natural drainage in order to avoid damage to roadway. Do not allow water to pond.

B. Distribute construction traffic evenly over compacted areas, where practical, to aid in obtaining uniform compaction. Protect exposed areas having high moisture content from wheel loads that cause rutting.

C. Maintain excavation and embankment areas until start of subsequent work. Repair and recompact slides, washouts, settlements, or areas with loss of density.

END OF SECTION

Section 02316

# EXCAVATION AND BACKFILL FOR STRUCTURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Excavation, backfilling, and compaction of backfill for structures.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No payment will be made for structural excavation and backfill under this Section. Include payment in unit price or lump sum for construction of structures.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 DEFINITIONS

A. Unsuitable Material: Unsuitable soil materials are the following:

1. Materials that are classified as ML, CL-ML, MH, PT, OH, and OL according to ASTM D 2487.

2. Materials that cannot be compacted to required density due to gradation, plasticity, or moisture content.

3. Materials that contain large clods, aggregates, stones greater than 4 inches in any dimension, debris, vegetation, waste or any other deleterious materials.

4. Materials that are contaminated with hydrocarbons or other chemical contaminants.

B. Suitable Material: Suitable soil materials are those meeting specification requirements. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement shall be considered suitable, unless otherwise indicated.

C. Select Material: Material as defined in Section 02320 - Utility Backfill Materials.

D. Backfill: Material meeting specified quality requirements, placed and compacted under controlled conditions around structures.

E. Foundation Backfill Materials: Natural soil or manufactured aggregate meeting Class I requirements and geotextile filter fabrics as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill where needed to provide stable support for structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.

F. Foundation Base: For foundation base material, use crushed stone aggregate with filter fabric as required, cement stabilized sand, or concrete seal slab. Foundation base provides smooth, level working surface for construction of concrete foundation.

G. Foundation Subgrade: Foundation subgrade is surface of natural soil which has been excavated and prepared to support foundation base or foundation backfill, where needed.

H. Ground Water Control Systems: Installations external to excavation such as well points, eductors, or deep wells. Ground water control includes dewatering to lower ground water, intercepting seepage which would otherwise emerge from side or bottom of excavation, and depressurization to prevent failure or heaving of excavation bottom. Refer to Section 01578 - Control of Ground Water and Surface Water.

I. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from excavation. Remove rain water and surface water which accidentally enters excavation as part of excavation drainage.

J. Excavation Drainage: Removal of surface and seepage water in excavation by sump pumping and using French drains surrounding foundation to intercept water.

K. Over-Excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below foundation as shown on Drawings, and backfilled with foundation backfill material.

L. Shoring System: Structure that supports sides of an excavation to maintain stable soil conditions and prevent cave-ins.

1.04 REFERENCES

A. ASTM D 698 - Standard Test Methods for Laboratory Compaction of Soil Using Standard Effort (12,400 ft-lbf/ft$^3$ (600kN-m/m$^3$)).

B. ASTM D 1556 - Standard Test Method for Density of Soil in Place by Sand-Cone Method.

C. ASTM D 2922 - Standard Test Methods for Density of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

D. ASTM D 3017 - Standard Test Method for Water Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depths).

E. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

F. TxDOT Tex-101-E - Preparing Soil and Flexible Base Materials for Testing.

G. TxDOT Tex-110-E - Particle Size Analysis of Soils.

H. Federal Regulations, 29 CFR, Part 1926, Standards - Excavation, Occupational Safety and Health Administration (OSHA).

1.05 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit work plan for excavation and backfill for each structure with complete written description which identifies details of proposed method of construction and sequence of operations for construction relative to excavation and backfill activities. Use descriptions, with supporting illustrations, sufficiently detailed to demonstrate to Project Manager that procedures meet requirements of Specifications and Drawings.

C. Submit excavation safety system plan.

1. Submit excavation safety system plan in accordance with applicable OSHA requirements for excavations.

2. Submit excavation safety system plan in accordance with requirements of Section 02260 - Trench Safety System, for excavations that fall under State and Federal trench safety laws.

D. Submit ground and surface water control plan in accordance with requirements in this Section and Section 01578 - Control of Ground Water and Surface Water.

E. Submit backfill material sources and product quality information in accordance with requirements of Section 02320 - Utility Backfill Materials.

F. Submit project record documents under provisions of Section 01785 - Project Record Documents. Record location of utilities, as installed, referenced to survey benchmarks. Include location of utilities encountered or rerouted. Give horizontal dimensions, elevations, inverts and gradients.

1.06 TESTS

A. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by City in accordance with requirements of Section 01454 - Testing Laboratory Services and as specified in this Section.

B. Perform embedment and backfill material source qualification testing in accordance with requirements of Section 02320- Utility Backfill Materials.

## PART 2 PRODUCTS

### 2.01 EQUIPMENT

A. Perform excavation with equipment suitable for achieving requirements of this Specification.

B. Use equipment which will produce degree of compaction specified. Compact backfill within 3 feet of walls with hand operated equipment. Do not use equipment weighing more than 10,000 pounds closer to walls than a horizontal distance equal to depth of fill at that time. Use hand operated power compaction equipment where use of heavier equipment is impractical or restricted due to weight limitations.

### 2.02 MATERIAL CLASSIFICATIONS

A. Use backfill materials conforming to classifications and product descriptions of Section 02320 - Utility Backfill Materials. Use classification or product description for backfill applications as shown on Drawings and as specified.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Conduct an inspection to determine condition of existing structures and other permanent installations.

B. Set up necessary street detours and barricades in preparation for excavation if construction will affect traffic. Conform to requirements of Section 01555 - Traffic Control and Regulation. Maintain barricades and warning devices at all times for streets and intersections where work is in progress, or where construction work is considered hazardous to traffic movements.

C. Perform work in accordance with OSHA standards. Employ an excavation safety system as specified in Section 02260 - Trench Safety Systems.

D. Remove existing pavements and structures, including sidewalks and driveways, in accordance with requirements of Section 02221 - Removing Existing Pavements and Structures.

E. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 01578 - Control of Ground Water and Surface Water.

### 3.02 PROTECTION

A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within grading limits as designated on Drawings, and in accordance with requirements of Section 01562 - Tree and Plant Protection.

B. Protect and support above-grade and below-grade utilities which are to remain.

C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities is indicated on Drawings.

D. Prevent erosion of excavations and backfill. Do not allow water to pond in excavations.

E. Maintain excavation and backfill areas until start of subsequent work. Repair and recompact slides, washouts, settlements, or areas with loss of density at no additional cost to City.

3.03 EXCAVATION

A. Perform excavation work so that underground structure can be installed to depths and alignments shown on Drawings. Use caution during excavation work to avoid disturbing surrounding ground and existing facilities and improvements. Keep excavation to absolute minimum necessary. No additional payment will be made for excess excavation not authorized by Project Manager.

B. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify Project Manager and obtain instructions before proceeding in such areas.

C. Immediately notify agency or company owning any line which is damaged, broken or disturbed. Obtain approval from Project Manager and agency for any repairs or relocations, either temporary or permanent.

D. Avoid settlement of surrounding soil due to equipment operations, excavation procedures, vibration, dewatering, or other construction methods.

E. Provide surface drainage during construction to protect work and to avoid nuisance to adjoining property. Where required, provide proper dewatering and piezometric pressure control during construction.

F. Conduct hauling operations so that trucks and other vehicles do not create dirt nuisance in streets. Verify that truck beds are sufficiently tight and loaded in such a manner such that objectionable materials will not spill onto streets. Promptly clear away any dirt, mud, or other materials that spill onto streets or are deposited onto streets by vehicle tires.

G. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed, replace those which are damaged or destroyed by Work.

H. Provide sheeting, shoring, and bracing where required to safely complete Work, to prevent excavation from extending beyond limits indicated on Drawings, and to protect Work and

adjacent structures or improvements. Use sheeting, shoring, and bracing to protect workmen and public conforming to requirements of Section 02260 - Trench Safety Systems.

I. Prevent voids from forming outside of sheeting. Immediately fill voids with grout, cement stabilized sand, or other material approved by Project Manager and compact to 95 percent standard density.

J. After completion of structure, remove sheeting, shoring, and bracing unless shown on Drawings to remain in place or directed by Project Manager in writing that such temporary structures may remain. Remove sheeting, shoring and bracing in such a manner as to maintain safety during backfilling operations and to prevent damage to Work and adjacent structures or improvements.

K. Immediately fill and compact voids left or caused by removal of sheeting with cement stabilized sand or other material approved by Project Manager and compact to 95 percent standard density.

3.04 HANDLING EXCAVATED MATERIALS

A. Classify excavated materials. Place material which is suitable for use as backfill in orderly piles at sufficient distance from excavation to prevent slides or cave-ins.

B. Provide additional backfill material in accordance with requirements of Section 02319 - Borrow, if adequate quantities of suitable material are not available from excavation and trenching operations at site.

3.05 DEWATERING

A. Provide ground water control per Section 01578 - Control of Ground Water and Surface Water.

B. Keep ground water surface elevation minimum of 2 feet below bottom of foundation base.

C. Maintain ground water control as directed by Section 01578 - Control of Ground Water and Surface Water and until structure is sufficiently complete to provide required weight to resist hydrostatic uplift with minimum safety factor of 1.2.

3.06 FOUNDATION EXCAVATION

A. Notify Project Manager at least 48 hours prior to planned completion of foundation excavations. Do not place foundation base until excavation is accepted by Project Manager.

B. Excavate to elevations shown on Drawings, as needed to provide space for foundation base, forming level undisturbed surface, free of mud or soft material. Remove pockets of soft or otherwise unstable soils and replace with foundation backfill material or material as directed by Project Manager. Prior to placing material over it, recompact subgrade where indicated on

Drawings, scarifying as needed, to 95 percent of maximum Standard Dry Density according to ASTM D 698. If specified level of compaction cannot be achieved, moisture condition subgrade and recompact until 95 percent is achieved, over-excavate to provide minimum layer of 24 inches of foundation backfill material, or other means acceptable to Project Manager.

C. Fill unauthorized excessive excavation with foundation backfill material or other material as directed by Project Manager.

D. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition. Keep excavations free of standing water and completely free of water during concrete placement.

E. Remove soils which become unsuitable due to inadequate dewatering or other causes, after initial excavation to required subgrade, and replace with foundation backfill material, as directed by Project Manager, at no additional cost to City.

F. Place foundation base, or foundation backfill material where needed, over subgrade on same day that excavation is completed to final grade. Where base of excavations are left open for longer periods, protect them with seal slab or cement-stabilized sand.

G. Use filter fabric as specified in Section 02621 - Geotextile to separate crushed aggregate, and other free draining Class I materials from native soils or select material backfill. Overlap fabric minimum of 12 inches beyond where another material stops contact with soil.

H. Place crushed aggregate, and other Class I materials, in uniform layers of 8-inch maximum thickness. Perform compaction by means of at least two passes of vibratory compactor.

3.07 FOUNDATION BASE.

A. Place foundation base after subgrade is properly prepared, including placement of foundation backfill where needed. Use foundation base consisting of 12-inch layer of crushed stone aggregate or cement stabilized sand. Alternately, seal slab with minimum thickness of 4 inches may be placed. Extend foundation base minimum of 12 inches beyond edge of structure foundation, unless shown otherwise on Drawings.

B. Where foundation base and foundation backfill are of same material, both can be placed in one operation.

3.08 BACKFILL

A. Complete backfill to surface of natural ground or to lines and grades shown on Drawings. Remove forms, lumber, trash and debris from structures. Deposit backfill in uniform layers and compact each layer as specified.

1. Unless otherwise shown on Drawings, for structures under pavement or within one foot back of curb, use cement stabilized sand up to the top of the proposed structure. Use suitable on-site material (random backfill) up to 12 inches below pavement base

or subgrade. Place minimum of 12 inches of select backfill below pavement base or subgrade.

2. Unless otherwise shown on Drawings, for structures not under pavement, use random backfill of suitable material up to the surface.

B. Do not place backfill against concrete walls or similar structures until laboratory test breaks indicate that concrete has reached minimum of 85 percent of specified compressive strength. Where walls are supported by slabs or intermediate walls, do not begin backfill operations until slab or intermediate walls have been placed and concrete has attained sufficient strength.

C. Remove concrete forms before starting backfill and remove shoring and bracing as work progresses.

D. Maintain backfill material at no less than 2 percent below nor more than 2 percent above optimum moisture content, unless otherwise approved by Project Manager. Place fill material in uniform 8-inch maximum loose layers. Compact fill to at least 95 percent of maximum Standard Proctor Density according to ASTM D 698 below paved areas. Compact fill to at least 90 percent around structures below unpaved areas.

E. Where backfill is placed against sloped excavation surface, run compaction equipment across boundary of cut slope and backfill to form compacted slope surface for placement of next layer of backfill.

F. Place backfill using cement stabilized sand in accordance with Section 02321 - Cement Stabilized Sand.

3.09 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01454 - Testing Laboratory Services.

B. Tests will be performed initially on minimum of one different sample of each material type for plasticity characteristics, in accordance with ASTM D 4318, and for gradation characteristics, in accordance with Tex-101-E and Tex-110-E. Additional classification tests will be performed whenever there is noticeable change in material gradation or plasticity.

C. In-place density tests of compacted subgrade and backfill will be performed according to ASTM D 1556, or ASTM D 2922 and ASTM D 3017, and at following frequencies and conditions:

1. Minimum of one test for every 50 to 100 cubic yards of compacted backfill material as directed by Project Manager.

2. A minimum of three density tests for each full work shift.

3. Density tests will be performed in all placement areas.

4. Number of tests will be increased when inspection determines that soil types or moisture contents are not uniform or when compacting effort is variable and not considered sufficient to attain uniform density.

5. Identify elevation of test with respect to natural ground.

6. Record approximate depth of lift tested.

D. At least one test for moisture-density relationships will be initially performed for each type of backfill material in accordance with ASTM D 698. Perform additional moisture-density relationship test once a month or whenever there is noticeable change in material gradation or plasticity.

E. When tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

3.10 DISPOSAL OF EXCESS MATERIAL

Dispose of excess materials in accordance with requirements of Section 01576 - Waste Material Disposal.

END OF SECTION

## SUPPLEMENTARY SPECIFICATIONS
## Section 02318 (SA)

## EXTRA UNIT PRICE WORK FOR EXCAVATION AND BACKFILL

**The following supplement adds to Specification Sections 02318 and 02318 (S). Where a portion of the Specifications is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.**

1.01 SECTION INCLUDES: Add paragraph C.

C. Ditch horizontal realignment excavation and backfill shall be performed where no slope paving is to be placed or as shown in the plans or directed by the City Engineer. Each realigned (unpaved) ditch section will reflect one slope built up with select backfill and the opposing slope excavated to maintain similar ditch geometrics and hydraulic flow characteristics.

Provide select backfill material specified in Section 02316.

1.02 UNIT PRICES: Add paragraph G.

G. Ditch horizontal realignment excavation and backfill shall be measured by the cubic yard (measured in place) of excavation removed or backfill placed as shown on the plans or approved by the City Engineer, and paid for under bid items listed in the Bid Form. This price is full compensation for removal and hauling material away or hauling to the site and compacting in place.

1.03 DEFINITIONS: Add paragraph F.

F. Additional payment will be made for material excavated as directed by the City Engineer or as necessary under the following conditions:
- More than one (1) foot outside vertical planes both sides of sidewalk.
- More than one (1) foot outside horizontal planes both sides of sidewalk.
- More than one (1) foot outside vertical planes both sides of driveway.
- More than one (1) foot outside horizontal planes both sides of driveway.

END OF SUPPLEMENT

Approved by:

Frank O. Simoneaux, Jr., P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

8-28-09
Date

Section 02318

# EXTRA UNIT PRICE WORK FOR EXCAVATION AND BACKFILL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Measurement and payment applicable to extra unit price work items for excavation and backfill made necessary by unusual or unforeseen circumstances encountered during utility installations.

B. Extra unit price work for excavation and backfill is paid only when authorized in advance by Project Manager.

### 1.02 MEASUREMENT AND PAYMENT

A. UNIT PRICES

1. Excavation Around Obstructions: Payment for excavation around obstructions is on cubic yard basis, measured in place, without deduction for volume occupied by portions of pipes, ducts, or other structures left in place across trenches excavated under this item.

2. Extra Hand Excavation: Payment for extra hand excavation is on cubic yard basis, measured in place.

3. Extra Machine Excavation: Payment for extra machine excavation is on cubic yard basis, measured in place.

4. Extra Placement of Backfill Material: Payment for extra placement of backfill material is on cubic yard basis, measured in place, for material installed as part of Work. At discretion of Project Manager, measurement of cubic yards may be calculated from volume of Extra Hand Excavation or Extra Machine Excavation for which replacement is made, minus volume of any Extra Placement of Granular Backfill authorized in conjunction with Work.

5. Extra Placement of Granular Backfill: Payment for extra placement of granular backfill material is on cubic yard basis, measured in place.

6. Extra Select Backfill: Payment for extra select backfill is on cubic yard basis, measured in place for a theoretical minimum trench width. The project Manager may authorize extra select backfill when soil from the excavation work does not include adequate quantities for placement of suitable on-site material (random backfill).

7. Refer to Section 01270 – Measurement and payment for unit price procedures.

1.03 DEFINITIONS

A. Excavation Around Obstructions: Excavation necessitated by obstruction of pipes (other than service connections 3 inches in diameter or less), ducts, or other structures, not shown on Drawings, and of an unusual or unforeseen nature which interfere with installation of utility piping by normal methods of excavation or auguring.

B. Extra Hand Excavation: Excavation by manual labor made necessary by unusual or unforeseen circumstances at locations approved in advance by Project Manager.

C. Extra Machine Excavation: Excavation by machine at or near project site to perform related work not included in original project scope but added for convenience of City, as approved in advance by Project Manager.

D. Extra Replacement of Backfill Material: Handling, backfill, and compaction of excavated material authorized under extra work bid items for Extra Hand Excavation or Extra Machine Excavation. Placement and compaction shall conform to requirements specified for excavation and backfill in Sections 02316 – Excavation and Backfill for Structures and 02317 – Excavation and Backfill for Utilities.

E. Extra Placement of Granular Backfill: Hauling, placing, and compacting granular backfill materials as approved by Project Manager in conjunction with Extra Replacement of Backfill Material. Materials placed under this item shall conform to requirements for Bank Run Sand, Cement Stabilized Sand, Concrete Sand, Gem Sand, Crushed Stone, or Crushed Concrete specified for backfill material in Sections 02316 – Excavation and Backfill for Structures and 02317 – Excavation and Backfill for Utilities..

F. Extra Select Backfill: Unsuitable material removed from the project and select backfill material hauled to the project, or conditioning unsuitable material on the site to make it select backfill. Provide select backfill material specified in Section 02320 – Utility Backfill Materials.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

Section 02319

# BORROW

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Soil materials for embankment or backfill.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for borrow is on cubic yard basis calculated by theoretical quantities using average end area method based on Drawings.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM D 2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures.

B. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

### 1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit location and description of proposed borrow area for approval.

C. Submit material samples for testing.

## PART 2 PRODUCTS

### 2.01 SOIL MATERIAL

A. Grade borrow material used for embankment or backfill free of lumps greater than 6 inches, rocks larger than 3 inches, organic material, chemical waste or other contamination, and debris. Take borrow material from sources approved by Project Manager.

B. Use material with plasticity index not less than 12, nor more than 20 when tested in accordance with ASTM D 4318. Maximum liquid limit shall be 45, unless approved by Project Manager. Do not use blend of cohesive and granular soils to achieve required plasticity index.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Notify Project Manager and testing laboratory 5 days in advance of opening borrow source to permit obtaining samples for qualification testing. When material does not meet specification requirements, locate another source of borrow.

B. Clear approved source area of trees, stumps, brush, roots, vegetation, organic matter, and other unacceptable material before excavation.

### 3.02 TESTS

A. Test and analyze soil materials in accordance with ASTM D 4318 and ASTM D 2216 under provisions of Section 01454 - Testing Laboratory Services.

### 3.03 EXCAVATION

A. Provide adequate drainage of surface water so that surface water run off does not enter borrow pit excavation.

### 3.04 HAULING

A. Use covered trucks. Conform to requirements of Section 01555 - Traffic Control and Regulation.

### 3.05 EMBANKMENT

A. Conform to requirements of Section 02330 - Embankment.

END OF SECTION

Section 02321

# CEMENT STABILIZED SAND

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Cement stabilized sand.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring cement stabilized sand.

2. Refer to Paragraph 3.04 for material credit.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM C 33 - Standard Specification for Concrete Aggregates (Fine Aggregate).

B. ASTM C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.

C. ASTM C 42 - Standard Test Methods for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

D. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.

E. ASTM C 123 - Standard Test Method for Lightweight Particles in Aggregate.

F. ASTM C 142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregates.

G. ASTM C 150 - Specification for Portland Cement.

H. ASTM D 558 - Standard Test Method for Moisture-Density Relations of Soil Cement-Mixtures.

I. ASTM D 1632 - Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory

J. ASTM D 1633 - Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.

K. ASTM D 2487 - Standard Test Method for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

L. ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

M. ASTM D 3665 - Standard Practice for Random Sampling of Construction Materials.

N. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit proposed target cement content and production data for sand-cement mixture in accordance with requirements of Paragraph 2.03, Materials Qualifications.

1.05 DESIGN REQUIREMENTS

A. Use sand-cement mixture producing minimum unconfined compressive strength of 100 pounds per square inch (psi) in 48 hours.

1. Design will be based on strength specimens molded in accordance with ASTM D 558 at moisture content within 3 percent of optimum and within 4 hours of batching.

2. Determine minimum cement content from production data and statistical history. Provide no less than 1.1 sacks of cement per ton of dry sand.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cement: Type I Portland cement conforming to ASTM C 150.

B. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C 33, or requirements for bank run sand of Section 02320 - Utility Backfill Materials, and the following requirements:

1. Classified as SW, SP, SW-SM, SP-SM, or SM by Unified Soil Classification System of ASTM D 2487.

2. Deleterious materials:

   a. Clay lumps, ASTM C 142 - less than 0.5 percent.

   b. Lightweight pieces, ASTM C 123; less than 5.0 percent.

   c. Organic impurities, ASTM C 40, color no darker than standard color.

3. Plasticity index of 4 or less when tested in accordance with ASTM D 4318.

C. Water: Potable water, free of oils, acids, alkalies, organic matter or other deleterious substances, meeting requirements of ASTM C 94.

2.02 MIXING MATERIALS

A. Add required amount of water and mix thoroughly in pugmill-type mixer.

B. Stamp batch ticket at plant with time of loading. Reject material not placed and compacted within 4 hours after mixing.

2.03 MATERIAL QUALIFICATION

A. Determine target cement content of material as follows:

1. Obtain samples of sand-cement mixtures at production facility representing range of cement content consisting of at least three points.

2. Complete molding of samples within 4 hours after addition of water.

3. Perform strength tests (average of two specimens) at 48 hours and 7 days.

4. Perform cement content tests on each sample.

5. Perform moisture content tests on each sample.

6. Plot average 48-hour strength vs. cement content.

7. Record scale calibration date, sample date, sample time, molding time, cement feed dial settings, and silo pressure (if applicable).

B. Test raw sand for following properties at point of entry into pug-mill:

1. Gradation
2. Plasticity index
3. Organic impurities
4. Clay lumps and friable particles
5. Lightweight pieces
6. Moisture content
7. Classification

C. Present data obtained in format similar to that provided in sample data form attached to this Section.

D. The target content may be adjusted when statistical history so indicates. For determination of minimum product performance use formula:

$f'_c$% 1/2 standard deviation

## PART 3 EXECUTION

### 3.01 PLACING

A. Place sand-cement mixture in maximum 12-inch-thick loose lifts and compact to 95 percent of maximum density as determined in accordance with ASTM D 558, unless otherwise specified. Refer to related specifications for thickness of lifts in other applications. Target moisture content during compaction is ±3 percent of optimum. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water to mix at plant.

B. Do not place or compact sand-cement mixture in standing or free water.

C. Where potable water lines cross wastewater line, embed wastewater line with cement stabilized sand in accordance with Texas Administrative Code §290.44(e)(4)(B):

1. Provide minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume. Use at least 2.5 bags of cement per cubic yard of mixture (2 sacks per ton of dry sand).

2. Unless otherwise shown on Drawings, embed wastewater main or lateral minimum of six inches above and below.

3. Use brown coloring in cement stabilized sand for wastewater main or lateral bedding for identification of pressure rated wastewater mains during future construction.

## 3.02 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01454 - Testing Laboratory Services.

B. One sample of cement stabilized sand shall be obtained for each 150 tons of material placed per day with no less than one sample per day of production. Random samples of delivered cement stabililized sand shall be taken in the field at point of delivery in accordance with ASTM 3665. Obtain three individual samples of approximately 12 to 15 lb each from the first, middle, and last third of the truck and composite them into one sample for test purpose.

C. Prepare and mold four specimens (for each sample obtained) in accordance with ASTM D 558, Method A, without adjusting moisture content. Samples will be molded at approximately same time material is being used, but no later than 4 hours after water is added to mix.

D. After molding, specimens will be removed from molds and cured in accordance with ASTM D 1632.

E. Specimens will be tested for compressive strength in accordance with ASTM D 1633, Method A. Two specimens will be tested at 48 hours plus or minus 2 hours and two specimens will be tested at 7 days plus or minus 4 hours.

F. A strength test will be average of strengths of two specimens molded from same sample of material and tested at same age. Average daily strength will be average of strengths of all specimens molded during one day's production and tested at same age.

G. Precision and Bias: Test results shall meet recommended guideline for precision in ASTM D 1633 Section 9.

H. Reporting: Test reports shall contain, as a minimum, the following information:

1. Supplier and plant number
2. Time material was batched
3. Time material was sampled
4. Test age (exact hours)
5. Average 48-hour strength
6. Average 7-day strength

7. Specification section number
8. Indication of compliance / non-compliance
9. Mixture identification
10. Truck and ticket numbers
11. The time of molding
12. Moisture content at time of molding
13. Required strength
14. Test method designations
15. Compressive strength data as required by ASTM D 1633
16. Supplier mixture identification
17. Specimen diameter and height, in.
18. Specimen cross-sectional area, sq. in.

3.03 ACCEPTANCE

A. Strength level of material will be considered satisfactory if:

1. The average 48-hour strength is greater than 100 psi with no individual strength test below 70 psi.

2. All 7-day individual strength tests (average of two specimens) are greater than or equal to 100 psi.

B. Material will be considered deficient when 7-day individual strength test (average of two specimens) is less than 100 psi but greater than 70 psi. See Paragraph 3.04 Adjustment for Deficient Strength.

C. The material will be considered unacceptable and subject to removal and replacement at Contractor=s expense when individual strength test (average of two specimens) has 7-day strength less than 70 psi.

D. When moving average of three daily 48-hour averages falls below 100 psi, discontinue shipment to project until plant is capable of producing material, which exceeds 100 psi at 48 hours. Five 48-hour strength tests shall be made in this determination with no individual strength tests less than 100 psi.

E. Testing laboratory shall notify Contractor, Project Manager, and material supplier by facsimile of tests indicating results falling below specified strength requirements within 24 hours.

F. If any strength test of laboratory cured specimens falls below the specified strength, Contractor may, at his own expense, request test of cores drilled from the area in question in accordance with ASTM C42. In such cases, three (3) cores shall be taken for each strength test that falls below the values given in 3.03.A.

G. Cement stabilized sand in an area represented by core tests shall be considered satisfactory if the average of three (3) cores is equal to at least 100 psi and if no single core is less that 70 psi. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted.

3.04 ADJUSTMENT FOR DEFICIENT STRENGTH

A. When mixture produces 7-day compressive strength greater than or equal to 100 psi, then material will be considered satisfactory and bid price will be paid in full.

B. When mixture produces 7-day compressive strength less than 100 psi and greater than or equal to 70 psi, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$30.00 \times 2\,(100\text{ psi} - \text{Actual psi})}{100}$$

C. When mixture produces 7-day compressive strength less than 70 pounds per square inch, then remove and replace cement-sand mixture and paving and other necessary work at no cost to City.

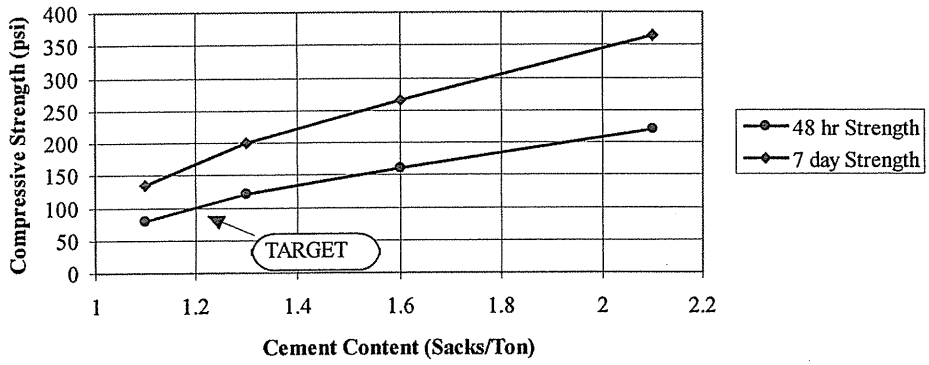
| **Supplier:** City Stabilized Sand | **Plant No:** 1 - Main Street | **Date of Tests:** January 1, 1997 |
|---|---|---|

| Item | Raw Sand | 1.1 Sack | 100 psi | 1.5 Sack | 2.0 Sack |
|---|---|---|---|---|---|
| Moisture Content | 10.9 | 15.7 | 14.0 | 13.8 | 13.7 |
| Cement Feed Dial Setting | -- | 2.25 | 2.5 | 2.75 | 3.75 |
| Silo Pressure (psi) | -- | 4 | 4 | 4 | 4 |
| Batch Time | 10:00 | 10:10 | 10:15 | 10:20 | 10:25 |
| Sample Time | -- | 10:10 | 10:15 | 10:20 | 10:25 |
| Molding Time | -- | 12:30 | 12:45 | 1:00 | 1:15 |
| Cement Content (sacks/ton) | -- | 1.1 | 1.3 | 1.6 | 2.1 |
| Compressive Strength at 48 hrs. (avg of 2) | -- | 80 | 120 | 160 | 220 |
| Compressive Strength at 7 days(avg of 2) | -- | 135 | 200 | 265 | 365 |
| | | | | | |

| Sieve size | Percent Passing | COH Spec. Section 02320 |
|---|---|---|
| 3/8 Inch | 100 | -- |
| No. 16 | 100 | -- |
| No. 40 | 100 | -- |
| No. 50 | 99 | -- |
| No. 100 | 41 | -- |
| No. 200 | 11 | 0 to 15 |
| | | |

| *Raw Sand Tests* | Result | City of Houston |
|---|---|---|
| *Plasticity Index* | Non-Plastic | 4 Maximum |
| *Organic Impurities* | Passing | No Darker Than |
| *Clay Lumps & Friable Parts (%)* | 0.0 | 0.5 % Maximum |
| *Lightweight Pieces (%)* | 0.0 | 5.0 % Maximum |
| *Classification* | SP-SM | SW, SP, SW-SM, SP-SM, SM |

**Compressive Strength vs Cement Content**




END OF SECTION

Section 02330

# EMBANKMENT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Construction of embankments with excess excavated material and borrow.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for embankment under this section. Include payment in unit price for excavation or borrow.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soils Using Standard Effort (12,400 ft-lbf/ft$^3$ (600 kN-m/m$^3$)).

B. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

C. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Refer to Section 02315 - Roadway Excavation for acceptable excess materials from roadway excavation.

B. Refer to Section 02317 - Excavation and Backfill For Utilities for acceptable excess materials from utility excavation and trenching.

C. Refer to Section 02319 - Borrow for acceptable borrow materials.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify borrow and excess excavated materials to be reused are approved.

B. Verify removals and clearing and grubbing operations have been completed.

### 3.02 PREPARATION

A. Backfill test pits, stump holes, small swales and other surface irregularities. Backfill and compact in designated lift depths to requirements for embankment compaction.

B. Record location and plug and fill inactive water and oil wells. Conform to Texas State Health Department, Texas Commission on Environmental Quality and Texas Railroad Commission requirements. Notify City Engineer prior to plugging wells.

C. Excavate and dispose of unsuitable soil and other unsuitable materials which will not consolidate. Backfill and compact to requirements for embankment. Unsuitable soil is defined in Section 02316 - Excavation and Backfill for Structures and Section 02320 - Utility Backfill Materials.

D. Backfill new utilities below future grade. Conform to requirements of Sections 02317 - Excavation and Backfill For Utilities, 02511 - Water Lines, 02531 - Gravity Sanitary Sewers, and 02532 - Sanitary Sewage Force Mains.

### 3.03 PROTECTION

A. Protect trees, shrubs, lawns, existing structures, and other features outside of embankment limits.

B. Protect utilities above and below grade, which are to remain.

C. Conform to protection requirements of Section 02315 - Roadway Excavation.

### 3.04 PLACING EMBANKMENT

A. Do not conduct placement operations during inclement weather or when existing ground or fill materials exceed 3 percent of optimum moisture content. Contractor may manipulate wet material to facilitate drying, by disking or windrowing.

B. Do not place embankment fill until density and moisture content of previously placed material comply with specified requirements.

C. Scarify areas to be filled to minimum depth of 4 inches to bond existing and new materials. Mix with first fill layer.

D. Spread fill material evenly, from dumped piles or windrows, into horizontal layers approximately parallel to finished grade. Place to meet specified compacted thickness. Break clods and lumps and mix materials by blading, harrowing, disking or other approved method. Extend each layer across full width of fill.

E. Each layer shall be homogeneous and contain uniform moisture content before compaction. Mix dissimilar abutting materials to prevent abrupt changes in composition of fill.

F. Layers shall not exceed the following compacted thickness:

1. Areas indicated to be under future paving or shoulders, to be constructed within 6 months: 6 inches when compacted with pneumatic rollers, or 8 inches when compacted with other rollers.

2. Other areas: 12 inches

G. For steep slopes, cut benches into slope and scarify before placing fill. Place increasingly wider horizontal layers of specified depth to level of each bench.

H. Build embankment layers on back slopes, adjacent to existing roadbeds, to level of old roadbed. Scarify top of old roadbed to minimum depth of 4 inches and recompact with next fill layer.

I. Construct to lines and grades shown on Drawings.

J. Remove unsuitable material and excess soil not being used for embankment from site in accordance with requirements of Section 01576 - Waste Material Disposal.

K. Maintain moisture content of embankment materials to attain required density.

L. Compact to following minimum densities at moisture content of optimum to 3 percent above optimum as determined by ASTM D 698, unless otherwise indicated on Drawings:

1. Areas under future paving and shoulders: Minimum density of 95 percent of maximum dry density.

2. Other areas: Minimum density of 90 percent of maximum dry density.

3.06 TOLERANCES

A. Top of compacted surface: Plus or minus 1/2 inch in cross section or 16 foot length.

3.07 FIELD QUALITY CONTROL

A. Compaction Testing will be performed in accordance with ASTM D 698 or ASTM D 2922 and ASTM D 3017 under provisions of Section 01454 - Testing Laboratory Services.

B. A minimum of three tests will be taken for each 1000 linear feet per lane of roadway or 500 square yards of embankment per lift.

C. If tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at no cost to City.

END OF SECTION

accordance with manufacturer's recommendations. Use integral bell-and-spigot gasketed joint designed so that when assembled, elastomeric gasket, contained in machined groove on pipe spigot, is compressed radially in pipe bell to form positive seal. Design joint to avoid displacement of gasket when installed in accordance with manufacturer's recommendations.

D. Furnish solid wall pipe for sanitary sewer force mains with minimum working pressure rating of 150 psi, and with inside diameter equal to or greater than nominal pipe size indicated on Drawings.

E. Furnish corrugated profile-wall polyethylene (CPP) pipe for gravity storm sewer and storm sewer culvert pipe. Joints shall be installed such that connection of pipe sections will form continuous line free from irregularities in flow line. Suitable joints are:

1. Integral Bell and Spigot. Bell shall overlap minimum of two corrugations of spigot end when fully engaged.

2. Exterior Bell and Spigot. Bell shall be fully welded to exterior of pipe and overlap spigot end so that flow lines and ends match when fully engaged.

F. Jointing:

1. Gaskets:

a. Meet requirements of ASTM F 477. Use gasket molded into circular form or extruded to proper section and then spliced into circular form. When no contaminant is identified, use gaskets of properly cured, high-grade elastomeric compound. Basic polymer shall be natural rubber, synthetic elastomer, or blend of both.

b. HDPE Pipes are Not allowed to be installed in potentially contaminated areas, unless approved by City Engineer.

| CONTAMINANT | GASKET MATERIAL REQUIRED |
|---|---|
| Petroleum (diesel, gasoline) | Nitrile Rubber |
| Other Contaminants | As recommended by pipe manufacturer |

2. Lubricant. Use lubricant for assembly of gasketed joints which has no detrimental effect on gasket or on pipe, in accordance with manufacturer's recommendations.

2.02 MATERIALS FOR SANITARY SEWER

A. Pipe and Fittings: High density, high molecular weight polyethylene pipe material meeting requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D 1248. Material meeting requirements of cell classification in accordance with ASTM D 3350 are also suitable for making pipe products under these specifications.

B. Other Pipe Materials: Materials other than those specified in Paragraph 2.02A, Pipe and Fittings, may be used as part of profile construction, e.g., as core tube to support shape of profile during processing, provided that these materials are compatible with base polyethylene material and are completely encapsulated in finished product and in no way compromise performance of pipe products in intended use. Examples of suitable material include polyethylene and polypropylene.

2.03 MATERIALS FOR GRAVITY STORM SEWERS AND STORM SEWER CULVERTS

A. Pipe and Fittings: High density, high molecular weight polyethylene HDPE virgin compound material meeting requirements of cell class outlined in ASTM D 3350.
Manufacturing shall meet requirements of ASTM F 2306.

2.04 TEST METHODS FOR SANITARY SEWER

A. Conditioning. Conditioning of samples prior to and during tests is subject to approval by Project Manager. When referee tests are required, condition specimens in accordance with Procedure A in ASTM D 618 at 73.4 degrees F plus or minus 3.6 degrees F and 50 percent relative humidity plus or minus 5 percent relative humidity for not less than 40 hours prior to test. Conduct tests under same conditions of temperature and humidity unless otherwise specified.

B. Flattening. Flatten three specimens of pipe, prepared in accordance with Paragraph 2.05A, in suitable press until internal diameter has been reduced to 40 percent of original inside diameter of pipe. Rate of loading shall be uniform and at 2 inches per minute. Test specimens, when examined under normal light and with unaided eye, shall show no evidence of splitting, cracking, breaking, or separation of pipe walls or bracing profiles.

C. Joint Tightness. Test for joint tightness in accordance with ASTM D 3212, except replace shear load transfer bars and supports with 6-inch-wide support blocks that can be either flat or contoured to conform to pipe's outer contour.

D. Purpose of Tests. Flattening and joint tightness tests are not intended to be routine quality control tests, but rather to qualify pipe to a specified level of performance.

2.05 TEST METHODS FOR GRAVITY STORM SEWERS AND STORM SEWER CULVERTS

A. All testing and material requirements shall be in accordance with ASTM F 2306.

2.06 MARKING

A. Mark each standard and random length of pipe in compliance with these Specifications with following information:

1. Pipe size.

2. Pipe class.

3. Production code.

4. Material designation.

PART 3 EXECUTION

3.01 INSTALLATION

A. Conform to requirements of following Sections:

1. Section 02550 - Sliplining Sanitary Sewers.

2. Section 02531 - Gravity Sanitary Sewers.

3. Section 02532 - Sanitary Sewage Force Mains.

4. Section 02533 - Acceptance Testing for Sanitary Sewers.

5. Section 02631 - Storm Sewers

B. Install pipe in accordance with the manufacturers recommended installation procedures and ASTM D 2774.

C. HDPE pipe is not approved in applications requiring augering of pipe.

D. Bedding and backfill: Conform to requirements of Section 02317 - Excavation and Backfill for Utilities.

E. Use only workmen trained in the installation of HDPE Pipe.

F. Do not store pipe uncovered direct in direct sunlight. Allow pipe temperature to approach ground temperature before each individual pipe section is terminally connected.

G. Joints: Join sections of HDPE pipe into continuous lengths above ground by thermal butt fusion method in accordance with AWWA C906 and pipe manufacturer's recommendations for specified service. Fusion joints: meeting minimum requirements of manufacturer for cool down time and other fusing requirements. Socket fusion and extrusion welding or hot gas welding will not be accepted.

H. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end pipe in accordance with manufacturer's recommendations.

END OF SECTION

Section 02506

# POLYVINYL CHLORIDE PIPE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Polyvinyl chloride pressure pipe for water distribution, in nominal diameters 4 inches through 20 inches.

B. Polyvinyl chloride sewer pipe for gravity sewers in nominal diameters 4 inches through 48 inches.

C. Polyvinyl chloride pressure pipe for gravity sewers and force mains in nominal diameters 4 inches through 20 inches.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for PVC pipe under this Section. Include cost in unit price for work included as specified in the following sections:

   a. Section 02511 - Water Lines

   b. Section 02531 - Gravity Sanitary Sewers

   c. Section 02532 - Sanitary Sewer Force Mains

   d. Section 02631 - Storm Sewers

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ANSI A 21.16 (AWWA C 116) - Protective Fusion Bonded Epoxy Coating for the Interior and Exterior Surfaces of Ductile Iron and Grey Iron Fittings for Water Supply Service.

B. ASTM D 1248 - Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

C. ASTM D 1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

D. ASTM D 2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

E. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

F. ASTM D 2444 - Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight).

G. ASTM D 2680 - Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Composite Sewer Piping.

H. ASTM D 3034 - Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

I. ASTM D 3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

J. ASTM D 3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

K. ASTM F 477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

L. ASTM F 679 - Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

M. ASTM F 794 - Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

N. ASTM F 949 - Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with Smooth Interior and Fittings.

O. AWWA C 110 - American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 Inches Through 48 Inches for Water.

P. AWWA C 111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

Q. AWWA C 900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inches Through 12 Inches for Water Distribution.

R. AWWA C 905 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In., for Water Transmission and Distribution.

S. AWWA C 909 - Standard for Molecularly-Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, 4 Inches through 12 Inches (100mm through 300 mm), for Water Distribution.

T. PPI TR3 - Policies and Procedures for Developing Recommended Hydrostatic Design Stresses for Thermoplastic Pipe Materials.

U. UNI-B-13 - Recommended Standard Performance Specification for Joint Restraint Devices for Use with Polyvinyl Chloride Pipe.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit shop drawings showing design of new pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fittings, flanges, and special details.

1.05 QUALITY CONTROL

A. Submit manufacturer's certifications that PVC pipe and fittings meet requirements of this Section and AWWA C 900, AWWA C 909 and AWWA C 905 for pressure pipe applications, or appropriate ASTM standard specified for gravity sewer pipe.

B. Submit manufacturer's certification that PVC pressure pipe for water lines and force mains has been hydrostatically tested at factory in accordance with AWWA C 900, AWWA C 909 and AWWA C 905, and this Section.

C. When foreign manufactured material is proposed for use, have material tested for conformance to applicable ASTM requirements by certified independent testing laboratory located in United States. Certification from other source is not acceptable. Furnish copies of test reports to Project Manager for review. Cost of testing paid by Contractor.

PART 2 PRODUCTS

2.01 MATERIAL

A. Use PVC compounds in manufacture of pipe that contain no ingredient in amount that has been demonstrated to migrate into water in quantities considered to be toxic.

B. Furnish PVC pressure pipe manufactured from Class 12454-A or Class 12454-B virgin PVC compounds as defined in ASTM D 1784. Use compounds qualifying for rating of 4000 psi for water at 73.4 F per requirements of PPI TR3. Provide pipe which is homogeneous throughout, free of voids, cracks, inclusions, and other defects, uniform as commercially practical in color, density, and other physical properties. Deliver pipe with surfaces free from nicks and scratches with joining surfaces of spigots and joints free from gouges and imperfections which could cause leakage.

C. PVC Restrained Pipe: Must be listed on City's current Product Approval List.

1. Pipe Material:

a. DR 18: For restrained joints where shown on Drawings.

b. DR 14: For alternate to offset pipe sections shown on Drawings. Do not use PVC for offset sections with depth of cover greater than 20 feet or less than 4 feet.

D. Water Service.

1. Provide self-extinguishing PVC pipe that bears Underwriters' Laboratories mark of approval and is acceptable without penalty to Texas State Fire Insurance Committee for use in fire protection lines.

2. Bear National Sanitation Foundation Seal of Approval (NSF-PW).

E. Gaskets:

1. Gaskets shall meet requirements of ASTM F 477. Use elastomeric factory-installed gaskets to make joints flexible and watertight.

2. Flat Face Mating Flange: Full faces 1/8-inch-thick ethylene propylene (EPR) rubber.

3. Raised Face Mating Flange: Flat ring 1/8-inch ethylene propylene (EDR) rubber, with filler gasket between OD of raised face and flange OD to protect flange from bolting moment.

F. Lubricant for rubber-gasketed joints: Water soluble, non-toxic, non-objectionable in taste and odor imparted to fluid, non-supporting of bacteria growth, having no deteriorating effect on PVC or rubber gaskets.

H. Do not use PVC in potentially or known contaminated areas.

I. Do not use PVC in areas exposed to direct sunlight.

2.02 WATER SERVICE PIPE

A. Pipe 4 inch through 12 inch: AWWA C 900, DR 18; AWWA C 909, Pressure Class 150 psi, AWWA C 900, DR 14 as alternate to offset pipe sections; nominal 20-foot lengths; cast-iron equivalent outside diameters.

B. Pipe 14 inch through 20 inch: AWWA C 905; 235 psi; DR 18; nominal 20-foot lengths; cast-iron equivalent outside diameter.

C. Provide Polyvinyl Chloride Pipe from approved manufacturers.

D. Make curves and bends by deflecting joints. Do not exceed maximum deflection recommended by pipe manufacturer. Submit details of other methods of providing curves and bends for review by Project Manager.

E. Hydrostatic Test: AWWA C 900, AWWA C 905, AWWA C 909, ANSI A 21.10 (AWWA C 110); at point of manufacture; submit manufacturer's written certification.

2.03 GRAVITY SEWER PIPE

A. PVC gravity sanitary sewer pipe and storm sewer pipe shall be in accordance with provisions in following table: Refer to the City of Houston Approved Product List.

| WALL CONSTRUCTION | | ASTM DESIGNATION | SDR (MAX.)/ STIFFNESS (MIN.) | DIAMETER SIZE RANGE |
|---|---|---|---|---|
| Solid | | D3034 | SDR 26 / PS 115 | 6" to 10" |
| | | D3034 | SDR 35 / PS 46 | 12" & 15" |
| | | F679 | SDR 35 / PS 46 | 18" to 27" |
| | | AWWA C900 | DR 18 / N/A | 4" to 12" |
| | | AWWA C909 | DR 18 / N/A | 4" to 12" |
| | | AWWA C905<br>ASTM D2241 | DR 18 / N/A | 14" to 16" |
| Truss (Gasketed) | | D2680 | N/A /200 psi | 8" to 15" |
| Profile | | F949<br>F949 | N/A / 46 psi<br>N/A / 115 psi | 12" to 36"<br>8" to 10" |
| | | F794<br>F794 | N/A / 46 psi<br>N/A / 46 psi | 8" to 30"<br>24" to 36" |

B. When solid wall PVC pipe 18 inches to 27 inches in diameter is required in SDR 26, provide pipe conforming to ASTM F 679, except provide wall thickness as required for SDR 26 and pipe strength of 115 psi.

C. For sewers up to 12-inch diameter crossing over water lines, or crossing under water lines with less than 2-feet separation, provide minimum 150 psi pressure-rated pipe conforming to ASTM D 2241 with suitable pressure rated PVC adapter couplings.

D. Joints: Spigot and integral wall section bell with solid cross section elastomeric or rubber ring gasket conforming to requirements of ASTM D 3212 and ASTM F 477, or ASTM D 3139 and ASTM F 477. Gaskets shall be factory-assembled and securely bonded in place to prevent displacement. Manufacturer shall test sample from each batch conforming to requirements ASTM D 2444.

E. Fittings: Provide PVC gravity sewer sanitary bends, tee, or wye fittings for new sanitary sewer construction. PVC pipe fittings shall be full-bodied, either injection molded or factory fabricated. Saddle-type tee or wye fittings are not acceptable.

F. Conditioning. Conditioning of samples prior to and during tests is subject to approval by. Project Manager. When referee tests are required, condition specimens in accordance with Procedure A in ASTM D 618 at 73.4 degrees F plus or minus 3.6 degrees F and 50 percent relative humidity plus or minus 5 percent relative humidity for not less than 40 hours prior to test. Conduct tests under same conditions of temperature and humidity unless otherwise specified.

G. Pipe Stiffness. Determine pipe stiffness at 5 percent deflection in accordance with Test Method D 2412. Minimum pipe stiffness shall be 46 psi. For diameters 4 inches through 18 inches, test three specimens, each a minimum of 6 inches (152 mm) in length. For diameters 21 inch through 36 inch, test three specimens, each a minimum of 12 inch (305 mm) in length.

H. Flattening. Flatten three specimens of pipe, prepared in accordance with Paragraph 2.04F, in suitable press until internal diameter has been reduced to 60 percent of original inside diameter of pipe. Rate of loading shall be uniform. Test specimens, when examined under normal light and with unaided eye, shall show no evidence of splitting, cracking, breaking, or separation of pipe walls or bracing profiles. Perform the flattening test in conjunction with pipe stiffness test.

I. Joint Tightness. Test for joint tightness in accordance with ASTM D 3212, except that joint shall remain watertight at minimum deflection of 5 percent. Manufacturer will be required to provide independent third party certification for joint testing each diameter of storm sewer pipe.

J. Purpose of Tests. Flattening and pipe stiffness tests are intended to be routine quality control tests. Joint tightness test is intended to qualify pipe to specified level of performance.

2.04 SANITARY SEWER FORCE MAIN PIPE

A. Provide approved PVC pressure pipe conforming to requirements for water service pipe, and conforming to minimum working pressure rating specified in Section 02532 - Sanitary Sewage Force Mains.

B. Acceptable pipe joints are integral bell-and-spigot, containing a bonded-in elastomeric sealing ring meeting requirements of ASTM F 477. In designated areas requiring restrained joint pipe

and fittings, use approved joint restraint device conforming to UNI-B-13, for PVC pipe 12-inch diameter and less.

C. Fittings: Provide approved ductile iron fittings as per Section 02501 - Ductile Iron Pipe and Fittings, Paragraph 2.04, except furnish fittings with one of following approved internal linings:

1. Nominal 40 mils (35 mils minimum) virgin polyethylene complying with ASTM D 1248, heat fused to interior surface of fitting

2. Nominal 40 mils (35 mils minimum) polyurethane

3. Nominal 40 mils (35 mils minimum) ceramic epoxy

4. Nominal 40 mils (35 mils minimum) fusion bonded epoxy

D. Exterior Protection: Provide polyethylene wrapping of ductile-iron fittings as required by Section 02528 - Polyethylene Wrap.

E. Hydrostatic Tests: Hydrostatically test pressure rated pipe in accordance with Paragraph 2.02E.

2.05 BENDS AND FITTINGS FOR PVC PRESSURE PIPE

A. Bends and Fittings: ANSI A 21.10 or ANSI A 21.53, ductile iron; ANSI A 21.11 single rubber gasket push-on type joint; minimum 150 psi pressure rating. Approved restrained joints, 250 psi, may be provided for up to 12 inches in diameter (water or sanitary).

B. Provide approved restrained joint fittings: Integral restrained joint fittings and pipe do not require secondary restraint.

PART 3 EXECUTION

3.01 PROTECTION

A. Store pipe under cover out of direct sunlight and protect from excessive heat or harmful chemicals in accordance with manufacturer's recommendations.

3.02 INSTALLATION

A. Conform to requirements of Section 02511 - Water Lines, Section 02531 - Gravity Sanitary Sewers, and Section 02532 - Sanitary Sewer Force Mains, as applicable.

B. Install PVC pipe in accordance with Section 02317 - Excavation and Backfill for Utilities, ASTM D 2321 for Sewer Pipe, and manufacturer's recommendations.

C. Install PVC water service pipe to clear utility lines and have minimum depth of cover below property line grade of street, unless otherwise required by Drawings:

1. Water service pipe 12 inches in diameter and smaller 4 feet of cover.

2. Water service pipe 16 inches in diameter and larger 5 feet of cover.

D. Avoid imposing strains that will overstress or buckle pipe when lowering pipe into trench.

E. Hand shovel pipe bedding under pipe haunches and along sides of pipe barrel and compact to eliminate voids and ensure side support.

F. Store PVC pipe under cover out of direct sunlight. Protect pipe from excessive heat or harmful chemicals. Prevent damage by crushing or piercing.

G. Allow PVC pipe to cool to ground temperature before backfilling when assembled out of trench to prevent pullout due to thermal contraction.

3.03 PVC RESTRAINED MECHANISM

A. Do not apply lubricant to spline or pipe or coupling spline grooves.

B. Do not use excessive force while inserting the spline through coupling.

C. Insert spline until it is fully seated around circumference of pipe.

D. Field Cutting of Pipe Ends:

1. Perform by workers certified by manufacturer.

2. Use a PVC pipe cutter and provide square ends.

3. Use manufacturer approved power routing and grooving tool to field fabricate required pipe groove.

END OF SECTION

Section 02581

# STREET LIGHTING CONDUIT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Pull box and conduit installation for electrical service to thoroughfare street lights.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for conduit is on linear foot basis measured horizontally between pull holes, pull boxes and terminal poles.

2. Refer to Section 01270 - Measurement and Payment for Unit Price Procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this section is included in total Stipulated Price.

### 1.03 REFERENCES

A. Houston Lighting and Power (HL&P) Specification Number 007-371-08. Specification for Installation of Conduit System for Thoroughfare Street Lighting.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. HL&P furnished material:

1. Materials Specifications in Paragraph 3.0 of HL&P Specifications Number 007-371-08.

B. Provide following material:

1. Materials specified in Paragraphs 7, 8, and 9 of HL&P Specifications number 007-371-08.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify lines and grades are correct. Determine if existing underground utilities or other obstructions may conflict with conduit installation shown on Drawings. Notify Project Manager of potential conflicts.

### 3.02 PREPARATION

A. Order pull boxes and warning tape from HL&P Customer Relations Representative three working days in advance of need. Verify requirements for "driveway" pull boxes for concrete areas subject to vehicular traffic and confirm total number of pull boxes required with HL&P Customer Relations Representative.

B. Obtain HL&P furnished materials Tuesday through Friday, excluding holidays, from Street Light Office at Magnolia Park Service Center, 104 North Greenwood, Houston.

### 3.03 INSTALLATION

A. Notify HL&P street lighting Engineer at least 2 working days in advance of scheduled conduit installation.

B. Install conduit in accordance with Paragraphs 7 through 9 and drawings pages 9 through 12 of HL&P Specification Number 700-371-08.

### 3.04 QUALITY CONTROL

A. Correct nonconforming conduit and pull box installations and obtain written notification from inspector that installation meets HL&P requirements.

B. Forward one copy of notification to HL&P Customer Relations Representative.

### 3.05 PROTECTION

A. Protect conduits and pull holes from damage or blockage until street light and circuit installation by HL&P.

B. Clear blockage in conduits prior to HL&P circuit installation.

END OF SECTION

Section 02611

# REINFORCED CONCRETE PIPE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Reinforced concrete pipe for sanitary sewers and storm sewers.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for reinforced concrete pipe under this Section. Include cost in unit price Work as specified in following Sections:

   a. Section 02426 - Sewer Line in Tunnels.

   b. Section 02531 - Gravity Sanitary Sewers.

   c. Section 02631 - Storm Sewers.

2. Refer to Section 01270- Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM C 76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

B. ASTM C 443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

C. ASTM C 497 - Standard Test Method for Concrete Pipe, Manhole Sections, or Tile.

D. ASTM C 506 - Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain and Sewer Pipe

E. ASTM C 655 - Standard Specification for Reinforced Concrete D-load Culvert, Storm Drain and Sewer Pipe.

F. ASTM C 877 - Standard Specification for External Sealing Bands for Noncircular Concrete Sewer, Storm Drain, and Culvert Pipe.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit complete product data for pipe, fittings and gaskets for approval. Indicate conformance to appropriate reference standards.

C. Submit manufacturer's certificate that concrete pipes meet applicable standards.

D. For jacking pipe, submit drawings and data describing grouting port design and closure procedures when required by Section 02431 - Tunnel Grout, including liner repair, as applicable.

PART 2 PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. Conform circular reinforced concrete pipe to requirements of ASTM C 76, for Class III wall "B" thickness. Conform to rubber gasket joints for sanitary sewers and storm sewers and tongue and groove for roadside ditch culverts to ASTM C 443.

B. Conform reinforced concrete arch pipe to requirements of ASTM C 506 for Class A-III. Joints shall conform to ASTM C 877.

C. Reinforced concrete elliptical pipe, either vertical or horizontal, shall conform to requirements of ASTM C 507 for Class VE-III for vertical or Class HE-III for horizontal. Use rubber gasket joints conforming to ASTM C 877.

D. Conform reinforced concrete D-load pipe requirements of ASTM C 655.

2.02 GASKETS

A. When no contaminant is identified, furnish rubber gasket conforming to ASTM C 443 for circular reinforced concrete pipe and rubber gasket conforming to ASTM C 877 for reinforced concrete elliptical pipe.

B. Use the following gasket materials for pipes to be installed in potentially contaminated areas, especially where free product is found near elevation of proposed sewer:

| CONTAMINANT | GASKET MATERIAL REQUIRED |
|---|---|
| Petroleum (diesel, gasoline) | Nitrile Rubber |
| Other Contaminants | As recommended by pipe manufacturer, Engineer of the Record and approved by City Engineer prior to installation |

2.03 LINERS FOR SANITARY SEWER PIPE

A. Reinforced concrete pipe for sanitary sewers shall be PVC lined and conform to Section 02427 - Plastic Liner for Large Diameter Concrete Sewers and Structures.

B. Reinforced concrete pipes to be installed in potentially contaminated areas shall have liners recommended by manufacturer as resistant to contaminants identified in Phase II Environmental Site Assessment Report.

2.04 SOURCE QUALITY CONTROL

A. Representatives of City Engineer will inspect manufacturer's plant and casting operations as deemed necessary.

PART 3 EXECUTION

3.01 INSTALLATION

A. Conform to requirements of following Sections, as applicable:

1. Section 02448 - Pipe and Casing Augering for Sewers.

2. Section 02531 - Gravity Sanitary Sewers.

3. Section 02631 - Storm Sewers.

4. Section 02441 - Micro-tunneling and Pipe-Jacked Tunnels.

B. Install reinforced concrete pipe in accordance with manufacturer's recommendations.

END OF SECTION

Section 02631

# STORM SEWERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. New storm sewers and appurtenances, modifications to existing storm sewer system and installation of roadside ditch culverts.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for storm sewers, including elliptical or box, installed by open-cut, augered with or without casing, or tunneling is on linear foot basis. Measurement for storm sewers and roadside ditch culverts will be taken along center line of pipe from center line to center line of manholes or from end to end of culverts. Payment will be made for each linear foot installed complete in place, including connections to existing manholes and inlets.

2. Payment for storm sewer leads, including elliptical leads, is on a linear foot basis.

3. Payment for corrugated metal pipe storm sewer outfall, including timber bents, is on a linear foot basis.

4. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturer's literature for product specifications and installation instructions.

C. Submit proposed methods, equipment, materials, and sequence of operations for sewer construction. Plan operations to minimize disruption of utilities to occupied facilities or adjacent property.

### 1.04 QUALITY ASSURANCE

A. The Condition for acceptance shall be watertight storm sewer that is watertight both in pipe-to-pipe joints and in pipe-to-manhole connections.

B. Provide manufacturer's certification to Specifications.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's recommendations.

B. Handle pipe, fittings, and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks or trailers. Do not use Materials cracked, gouged, chipped, dented, or otherwise damaged shall not be use materials for installation.

C. Store pipe and fittings on heavy timbers or platforms to avoid contact with ground.

D. Unload pipe, fittings, and appurtenances as close as practical to location of installation to avoid unnecessary handling.

E. Keep interiors of pipe and fittings free of dirt and foreign matter.

F. Store PVC pipe out of direct sunlight.

PART 2 PRODUCTS

2.01 PIPE

A. Provide piping materials for storm sewers shall be of sizes and types specified unless otherwise indicated on Drawings.

B. In diameters where material alternatives are available, provide pipe from single manufacturer for each pipe diameter, unless otherwise approved by Project Manager or otherwise shown on Drawings.

C. Existing pipe that has been removed during construction cannot be reused.

2.02 PIPE MATERIAL SCHEDULE

A. Storm Sewer Pipe: Use pipe materials that conforming to requirements specified in one or more of the following Sections as shown on the Drawings.

1. Section 02506 - Polyvinyl Chloride Pipe. Not allowed in the following applications:

a. Potentially Petroleum Contaminated Areas (PPCA).

b. Augering/ jacking

2. Section 02505 - High Density Polyethylene (HDPE) Solid and Profile Wall Pipe. For use only where Storm Sewers are associated with Local Streets, where Local Street is definded by City of Houston Code of Ordinances 42-122.

3. Section 02611 - Reinforced Concrete Pipe.

4. Section 02641 - Monolithic Reinforced Concrete Sewers.

5. Section 02612 - Precast Reinforced Concrete Box Sewers.

6. Section 02642 - Corrugated Metal Pipe use only where Corrugated Metal Pipe is shown on Drawings.

B. Driveway Culvert Pipe for Streets with Open Ditches: Use pipe materials conforming to requirements specified in one or more of the following Sections as shown on the Drawings.

1. Section 02505 - High Density Polyethylene (HDPE) Solid and Profile Wall Pipe Use for Residential Culverts only. Use Concrete Pipe for long run culverts.

2. Section 02611 - Reinforced Concrete Pipe.

3. Section 02641 - Monolithic Reinforced Concrete Sewers.

4. Section 02612 - Precast Reinforced Concrete Box Sewers.

C. Provide pipe meeting minimum class, dimension ratio, or other criteria indicated.

D. Pipe materials other than those listed above shall not be used for storm sewers.

2.03 BEDDING, BACKFILL, AND TOPSOIL MATERIAL

A. Bedding and Backfill Material: Conform to requirements of Sections 02317 - Excavation and Backfill for Utilities, Section 02320 - Utility Backfill Material, and Section 2321 – Cement Stabilized Sand, and 02322 – Flowable Fill.

B. Topsoil: Conform to requirements of Section 02911 - Topsoil.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare traffic control plans and set up street detours and barricades in preparation for excavation when construction will affects traffic. Conform to requirements of Section 01555 Traffic Control and Regulation.

B. Provide barricades, flashing warning lights, and signs for excavations. Conform to requirements of Section 01555 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections while Work is in progress or where traffic is affected by Work.

C. Immediately notify agency or company owning utility lines which are damaged, broken, or disturbed. Obtain approval from Project Manager and agency for repairs or relocations, either temporary or permanent.

D. Remove old pavements and structures, including sidewalks and driveways in accordance with requirements of Section 02221 - Removing Existing Pavements and Structures.

E. Install and operate dewatering and surface water control measures in accordance with Section 01578 - Control of Ground Water and Surface Water.

3.02 EXCAVATION

A. Earthwork. Conform to requirements of Section 02317 - Excavation and Backfill for Utilities. Use bedding as indicated on Drawings.

B. Line and Grade. Establish required uniform line and grade trench from benchmarks identified by Project Manager. Maintain this control for minimum of 100 feet behind and ahead of pipe-laying operation. Use laser beam equipment to establish and maintain proper line and grade of Work. Or use appropriately sized grade boards which are substantially supported.

C. Trench Excavation. Excavate pipe trenches to level as indicated on Standard Details. Backfill excavation with specified bedding material to level of lower one-third of pipe barrel. Tamp and compact backfill to provide bedding at indicated grade. Form bedding foundation to minimum depth of one-eighth of pipe diameter, but not less than 12 inches.

3.03 PIPE INSTALLATION

A. Install in accordance with pipe manufacturer's recommendations and as specified in this section.

B. Install pipe only after excavation is completed, bottom of trench is shaped, bedding material is installed, and trench has been approved by Project Manager.

C. Install pipe to line and grade indicated on Drawings. Place pipe so that it has continuous bearing of barrel on bedding material with no voids, and is laid in trench so interior surfaces of pipe follows grades and alignments indicated.

D. Install pipe with bells of pipe facing upstream of anticipated flow.

E. Form concentric joint with each section of adjoining pipe to prevent offsets.

F. Place and drive home newly laid sections with a sling or come-a-long winches to eliminate damage to sections. Unless otherwise approved by Project Manager, provide end protection to prevent damage while using back hoes or similar powered equipment to drive home newly laid sections.

G. Keep interior of pipe clean as installation progresses.

H Keep excavations free of water during construction and until final inspection.

I. When work is not in progress, cover exposed ends of pipes with pipe plug specifically designed to prevent foreign material from entering pipe.

J. For PVC Pipe:

1. Provide a minimum cover as per City Standard detail from top of pavement to top of pipe, but no less than 2 feet.

2. Accomplish transitions to different material of pipe in a manhole or inlet box. No adapter, coupling for dissimilar pipe, or saddle connections allowed.

3. Provide pipe sections in standard lengths with minimum length of 13 feet. Pipe may be field modified to shorten length no less than 4 feet, unless otherwise approved by Project Manager. Field modify pipe per manufacturer's recommendations.

4. No beveling at joint allowed. Cut to be perpendicular to longitudinal axis.

5. Provide gasketed bell and spigot joints installed per manufacturer's recommendations. Gasketed pipe joints; clean and free of debris, show no leakage after installation.

3.04 PIPE INSTALLATION OTHER THAN OPEN CUT

A. Conform to requirements of Section 02448 - Pipe and Casing Augering for Sewers where required.

B. Conform to requirements of Section 02441 - Microtunneling and Pipe-Jacking Tunnels where required.

C. Not allowed for plastic sewer pipe.

3.05 INSTALLATION OF APPURTENANCES

A. Construct manholes to conform to requirements of Sections 02081 - Cast-in-place Concrete Manholes, Section 02082 - Precast Concrete Manholes, and Section 2087 - Brick Manholes for Storm Sewers. Install frames, grate rings, and covers to conform to requirements of Section 02084 - Frames, Grates, Rings, and Covers.

B. Install PVC pipe culverts with approved end treatments. Approved end treatments include concrete headwalls, wingwalls and collars. Refer to City Standards detail for end treatment requirements.

C. Install HDPE pipe culverts with approved end treatments. Approved end treatments include concrete headwalls, wingwalls and collars. Refer to City Standards detail for end treatment requirements.

D. Install inlets, headwalls, and wingwalls to conform to requirements of Section 02632 - Cast-in-place Inlets, Headwalls, and Wingwalls and Section 02633 - Precast Concrete Inlets, Headwalls, and Wingwalls.

E. Rehabilitate existing manholes to conform to requirements of Section 02555 – Manhole Rehabilitation. Adjust manhole covers and inlets to grade conforming to requirements of Section 02086 - Adjusting Manholes, Inlets, and Valve Boxes to Grade.

F. Dimension for Type C and Type E manholes shall be as shown on Drawings.

3.06 INSPECTION AND TESTING

A. Perform post installation television inspection in accordance with Section 02531 – Gravity Sanitary Sewers. Hand held cameras may be used in storm sewers in lieu of requirements of Paragraph 3.09 of Section 02531 – Gravity Sanitary Sewers. Clearly stencil distance markings on each joint of pipe to indicate distance from starting manhole when using hand held cameras.

3.07 BACKFILL AND SITE CLEANUP

A. Backfill trench after pipe installation is inspected and approved by Project Manager.

B. Backfill and compact soil in accordance with Section 02317 - Excavation and Backfill for Utilities.

C. Repair and replace removed or damaged pavement and sidewalks as specified in Section 02951 - Pavement Repair and Restoration.

D. In unpaved areas, grade surface as uniform slope to natural grade as indicated on Drawings. Provide minimum of 4 inches of topsoil and seed according to requirements of Section 02921 Hydromulch Seeding, or Section 02922 - Sodding, as required.

END OF SECTION

Section 02632

# CAST-IN-PLACE INLETS, HEADWALLS AND WINGWALLS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Cast-in-place inlets for storm or sanitary sewers, including cast iron frame and plate or grate.

B. Cast-in-place headwalls including wingwalls for storm sewers.

C. Cast-in-place junction box with lid or grate top.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for inlets is on unit price basis for each inlet installed.

2. Payment for headwalls including wingwalls is on unit price basis for each headwall including wingwall installed.

3. Payment for junction box with lid or grate top is on unit price basis for each junction box installed.

4. Payment for inlets and for culvert headwalls including wingwalls and junction boxes includes connection of lines and furnishing and installing frames, grates, rings, and covers.

5. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit shop drawings for approval of design and construction details for cast-in-place units which differ from units shown on Drawings.

C. Submit manufacturers' data and details for frames, grates, rings, and covers.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Concrete: Class A concrete with minimum compressive strength of 4000 psi conforming to requirements of Section 03315 - Concrete for Utility Construction, unless otherwise indicated on Drawings.

B. Reinforcing Steel: Conform to requirements of Section 03315 - Concrete for Utility Construction.

C. Concrete Bricks - Conform to requirements of Section 04210 - Brick Masonry for Utility Construction. Use manhole bricks.

D. Mortar and Hydraulic Cement - Conform to requirements of Section 04061 - Mortar.

E. Miscellaneous metals: Cast-iron frames, grates, rings, and covers conforming to requirements of Section 02084 - Frames, Grates, Rings, and Covers.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify lines and grades are correct.

B. Verify compacted subgrade will support loads imposed by inlets.

### 3.02 INSTALLATION

A. Construct units complete in place to dimensions, lines and grades as shown on Drawings.

B. Excavate in accordance with requirements of Section 02317 - Excavation and Backfill for Utilities.

C. Construct box section of inlet of Class A concrete or brick.

D. Plaster brick inlets with 1/2 inch mortar on inside. Use walls for brick inlets minimum of 8 inches thick. Conform to the requirements of Section 04210 - Brick Masonry for Utility Construction.

E. Forms required for both outside and inside faces of concrete inlet walls, however, when nature of material excavated for inlet can be hand trimmed to smooth vertical face, outside forms may be omitted with approval of Project Manager.

F. Place reinforcing steel to conform to details shown on Drawings. Provide positive means for holding steel cages in place during concrete placement. Welding of reinforcing steel is not permitted unless noted on Drawings. Maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch, whichever is less. Regardless of variation, maintain minimum cover of concrete over reinforcement as shown on Drawings.

G. Chamfer exposed edges unless otherwise indicated on Drawings.

3.03 FINISHES

A. Cut off inlet leads neatly at inside face of inlet wall. Point up with mortar.

B. When box section of inlet complete, shape floor of inlet with mortar to conform to detailed Drawings.

C. Finish concrete surfaces in accordance with requirements of Section 03315 - Concrete for Utility Construction.

3.04 QUALITY CONTROL

A. Verify that inlets are free of leaks. Repair leaks in approved manner.

3.05 CONNECTIONS

A. Connect inlet leads to inlets.

B. Seal leads inside and outside with hydraulic cement.

3.06 BACKFILL

A. Backfill area of excavation surrounding each completed inlet according to requirements of Section 02317 - Excavation and Backfill for Utilities.

END OF SECTION

Section 02633

# PRECAST CONCRETE INLETS, HEADWALLS, AND WINGWALLS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Precast concrete inlets for storm or sanitary sewers, including cast iron frame and plate or grate.

B. Precast concrete headwalls and wingwalls for storm sewers.

C. Precast junction box with lid or grate top.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for inlets is on unit price basis for each inlet installed.

2. Payment for headwalls and wingwalls is on unit price basis for each headwall and wingwall installed.

3. Payment for junction box with lid or grate top is on unit price basis for each junction box installed.

4. Payment for inlets, headwalls, wingwalls, and junction boxes includes connection of lines and furnishing and installing frames, grates, rings, and covers.

5. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM C 76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit shop drawings for approval of design and construction details for precast concrete inlets, junction box headwalls, and wingwalls. Precast units differing from standard designs shown on Drawings will be rejected unless shop drawing submittals are approved. Clearly show proposed substitution is equal or superior in every aspect to standard designs.

C. Submit manufacturers' data and details for frames, grates, rings, and covers.

1.05 STORAGE AND SHIPMENT

A. Store precast units on level blocking. Do not place loads until design strength is reached. Shipment of acceptable units may be made when 28-day strength requirements have been met.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete: Provide concrete for precast machine-made units meeting requirements of ASTM C 76 regarding reinforced concrete, cement, aggregate, mixture, and concrete test. Minimum 28-day compressive strength shall be 4000 psi.

B. Reinforcing Steel: Place reinforcing steel to conform to details shown on Drawings and as follows:

1. Provide positive means for holding steel cages in place throughout production of concrete units. Maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch, whichever is less. Regardless of variation, maintain minimum cover of concrete over reinforcement as shown on Drawings.

2. Welding of reinforcing steel is not permitted unless noted on Drawings.

C. Mortar and Hydraulic Cement: Conform to requirements of Section 04261 - Mortar.

D. Miscellaneous Metal: Cast-iron frames and plates conforming to requirements of Section 02084 - Frames, Grates, Rings, and Covers.

2.02 SOURCE QUALITY CONTROL

A. Tolerances: Allowable casting tolerances for concrete units are plus or minus 1/4 inch from dimensions shown on Drawings. Concrete thickness in excess of that required will not

constitute cause for rejection provided that excess thickness does not interfere with proper jointing operations.

B. Precast Unit Identification: Mark date of manufacture and name or trademark of manufacturer clearly on inside of inlet, headwall, or wingwall.

C. Rejection: Precast units rejected for non-conformity with these specifications and for following reasons:

1. Fractures or cracks passing through shell, except for single end crack that does not exceed depth of joint.

2. Surface defects indicating honeycombed or open texture.

3. Damaged or misshaped ends, where damage would prevent making satisfactory joint.

D. Replacement: Immediately remove rejected units from Work site and replace with acceptable units.

E. Repairs: Occasional imperfections resulting from manufacture or accidental damage may be repaired if, in opinion of Project Manager, repaired units conform to requirements of these specifications.

PART EXECUTION

3.01 EXAMINATION

A. Verify lines and grades are correct.

B. Verify compacted subgrade will support loads imposed by inlets.

3.02 INSTALLATION

A. Install units complete in place to dimensions, lines, and grades as shown on Drawings.

B. Excavate in accordance with requirements of Section 02317 - Excavation and Backfill for Utilities.

C. Bed precast concrete units on foundations of firm, stable material shaped to conform to shape of unit bases.

D. Provide adequate means to lift and place concrete units.

3.03 FINISHES

A. Use hydraulic cement to seal joints, fill lifting holes and as otherwise required.

B. When box section of inlet has been completed, shape floor of inlet with mortar to conform to Drawing details.

C. Adjust cast iron inlet plate frames to line, grade, and slope shown on Drawings. Grout frame in place with mortar.

3.04 INLET WATERTIGHTNESS

A. Verify that inlets are free of leaks. Repair leaks in approved manner.

3.05 CONNECTIONS

A. Connect storm sewer leads to inlets as shown on Drawings. Seal connections inside and outside with hydraulic cement. Make connections watertight.

3.06 BACKFILL

A. Backfill area of excavation surrounding each completed inlet, headwall, or wingwall according to requirements of Section 02317 - Excavation and Backfill for Utilities.

END OF SECTION

Section 02751

# CONCRETE PAVING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Portland cement concrete paving.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for concrete paving is on square yard basis. Separate pay items are used for each different required thickness of pavement.

2. Payment for concrete paving, high early strength, is on square yard basis.

3. Payment for pavement repair or pavement replacement for utility projects is on a square yard basis and includes base materials in accordance with Section 02951.

4. Refer to Section 01270 - Measurement and Payment for unit price procedures.

5. Refer to Paragraph 3.15, Unit Price Adjustment.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

B. ASTM A185 - Standard Specifications for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

C. ASTM A497 – Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

D. ASTM A615 - Standard Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.

E. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

F. ASTM C 33 - Standard Specifications for Concrete Aggregates.

G. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

H. ASTM C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.

I. ASTM C 42 - Standard Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

J. ASTM C 78 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third Point Loading).

K. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.

L. ASTM C 131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

M. ASTM C 136 - Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

N. ASTM C 138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.

O. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.

P. ASTM C 150 - Standard Specification for Portland Cement.

Q. ASTM C 174 - Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores.

R. ASTM C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

S. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.

T. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.

U. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.

V. TxDOT Tex-203-F - Sand Equivalent Test.

W TxDOT Tex-406-A - Material Finer than 75 Φm (No. 200) Sieve In Mineral Aggregates (Decantation Test for Cement Aggregates).

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit proposed mix design and test data for each type and strength of concrete in Work. Include proportions and actual flexural strength obtained from design mixes at required test ages.

C. Submit for approval manufacturer's description and characteristics for mixing equipment, and for traveling form paver, when proposed for use.

D. Submit manufacturer's certificates giving properties of reinforcing steel. Include certificate of compliance with ASTM A 82. Provide specimens for testing when required by Project Manager.

1.05 HANDLING AND STORAGE

A. Do not mix different classes of aggregate without written permission of Project Manager.

B. Class of aggregate being used may be changed before or during Work with written permission of Project Manager. Comply new class with specifications.

C. Reject segregated aggregate. Before using aggregate whose particles are separated by size, mix them uniformly to grading requirements.

D. Reject aggregates mixed with dirt, weeds, or foreign matter.

E. Do not dump or store aggregate in roadbed.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement:

1. Sample and test cement to verify compliance with Standards of ASTM C 150, Type I or Type III.

2. Bulk cement which meets referenced standards may be used when method of handling is approved by Project Manager. When using bulk cement, provide satisfactory weighing devices.

3. Fly ash which meets standards of ASTM C 618 may be used as mineral fill when method of handling is approved by Project Manager.

B. Water: Conform to requirements for water in ASTM C 94.

C. Coarse Aggregate: Crushed stone, gravel, or combination thereof, which is clean, hard, and durable, conforms to requirements of ASTM C 33, and has abrasion loss not more than 45 percent by weight when subjected to Los Angeles Abrasion Test (ASTM C 131).

1. Maximum percentage by weight of deleterious substances shall not exceed following values:

| Item | Percent by Weight of Total Sample Maximum |
|---|---|
| Clay lumps and friable particles | 3.0 |
| Material finer than 75-µm (No. 200) sieve: | |
| Concrete subject to abrasion | 3.0* |
| All Other concrete | 5.0* |
| Coal and lignite: | |
| Where surface appearance of concrete is of importance | 0.5 |
| All other concrete | 1.0 |

* In case of manufactured sand, when material finer than 75-µm (No. 200) sieve consists of dust of fracture, essentially free from clay or shale, these limits may be increased to 5 and 7 percent, respectively.

2. Conform coarse aggregate (size 1 1/2 inch to No. 4 sieve) to requirements of ASTM C 33. Use gradation within following limits when graded in accordance with ASTM C 136:

| Sieve Designation (Square Openings) | Percentage by Weight |
|---|---|
| Retained on 1 3/4" sieve | 0 |
| Retained on 1 1/2"sieve | 0 to 5 |
| Retained on 3/4" sieve | 30 to 65 |
| Retained on 3/8" sieve | 70 to 90 |
| Retained on No. 4 sieve | 95 to 100 |
| Loss by Decantation Test | |
| *Method Tex-406-A | 1.0 maximum |

* In case of aggregates made primarily from crushing of stone, when material finer than 200 sieve is dust of fracture essentially free from clay or shale as established by Part III of TxDOT Tex-406-A, percent may be increased to 1.5.

D. Fine Aggregate: Sand, manufactured sand, or combination thereof, composed of clean, hard, durable, uncoated grains, free from loams or other injurious foreign matter. Conform fine aggregate for concrete to requirements of ASTM C 33. Use gradation within following limits when graded in accordance with ASTM C 136:

| Sieve Designation (Square Openings) | Percentage by Weight |
|---|---|
| | |

| | |
|---|---|
| Retained on 3/8" sieve | 0 |
| Retained on No. 4 sieve | 0 to 5 |
| Retained on No. 8 sieve | 0 to 20 |
| Retained on No. 16 sieve | 15 to 50 |
| Retained on No. 30 sieve | 35 to 75 |
| Retained on No. 50 sieve | 65 to 90 |
| Retained on No. 100 sieve | 90 to 100 |
| Retained on No. 200 sieve | 97 to 100 |

1. When subjected to color test for organic impurities (ASTM C 40), fine aggregate shall not show color darker than standard color. Fine aggregate shall be subjected to Sand Equivalent Test (Tex-203-F). Sand equivalent value shall not be less than 80, unless higher value is shown on Drawings.

E. Mineral Filler: Type "C" or Type "F" fly ash of acceptable quality and meeting requirements of ASTM C 618 may be used as mineral admixture in concrete mixture. When fly ash mineral filler is used, store and inspect in accordance with ASTM C 618. Do not use fly ash in amounts to exceed 25 percent by weight of cementatious material in mix design. Cement content may be reduced when strength requirements can be met. Note: When fly ash is used, term "cement" is defined as cement plus fly ash.

F. Air Entraining Agent: Furnish air entraining agent conforming to requirements of ASTM C 260.

G. Water Reducer: Water reducing admixture conforming to requirements of ASTM C 494 may be used when required to improve workability of concrete. Amount and type of admixture is subject to approval by Project Manager.

H. Reinforcing Steel:

1. Provide new billet steel manufactured by open hearth process and conforming to ASTM A 615, Grade 60. Store steel to protect it from mechanical injury and rust. At time of placement, steel shall be free from dirt, scale, rust, paint, oil, or other injurious materials.

2. Cold bend reinforcing steel to shapes shown. Once steel has been bent, it may not be rebent.

3. Provide wire fabric conforming to ASTM A 82. Use fabric in which longitudinal and transverse wires have been electrically welded at points of intersection. Welds shall have sufficient strength not to be broken during handling or placing. Conform welding and fabrication of fabric sheets to ASTM A 185.

2.02 EQUIPMENT

A. Conform Equipment to requirements of ASTM C94.

2.03 MIXING

A. Flexural strength shall be as specified using test specimens prepared in accordance with ASTM C 31 and tested in accordance with ASTM C78 (using simple beam with third-point loading). Compressive strength shall be as specified using test specimens prepared in accordance with ASTM C 31 and tested in accordance with ASTM C 39. Determine and measure batch quantity of each ingredient, including water for batch designs and all concrete produced for Work. Mix shall conform to these specifications and other requirements indicated on Drawings.

B. Mix design to produce concrete which will have flexural strength of 500 psi at 7 days and 600 psi at 28 days. Minimum compressive strength shall be 3000 pounds per square inches for 7 days and 3500 pounds per square inches at 28 days when tested in accordance with ASTM C39. Slump of concrete shall be at least 2 inches but no more than 5 inches, when tested in accordance with ASTM C143.

1. Concrete pavement, including curb, curb and gutter, and saw-tooth curb, shall contain at least 5 1/2 sacks (94 pounds per sack) of cement per cubic yard, with not more than 6.5 gallons of water, net, per sack of cement (water-cement ratio maximum 0.57). Determine cement content in accordance with ASTM C 138. Addition of mineral filler may be used to improve workability or plasticity of concrete to limits specified.

2. Coarse dry aggregate shall not exceed 85 percent of loose volume of concrete.

3. Add air-entraining admixture to ensure uniform distribution of agent throughout batch. Base air content of freshly mixed air-entrained concrete upon trial mixes with materials to be used in Work, adjusted to produce concrete of required plasticity and workability. Percentage of air entrainment in mix shall be 4 1/2 percent plus or minus 1 1/2 percent. Determine air content by testing in accordance with ASTM C 231.

4. Use retardant when temperature exceeds 90 degrees F. Proportion as recommended by manufacturer. Use same brand as used for air-entraining agent. Add and batch material using same methods as used for air-entraining agent.

C. Use high early strength concrete pavement to limits shown on Drawings. Design to meet following:

1. Concrete Mix: Flexural strength greater than or equal to 500 psi at 72 hours.

2. Cement: Minimum of 7 sacks of cement per cubic yard of concrete.

3. Water-Cement Ratio maximum of 0.45. Slump of concrete shall a maximum of 5 inches, when tested in accordance with ASTM C 143.

4. Other requirements for proportioning, mixing, execution, testing, etc., shall be in accordance with this Section 02751 - Concrete Paving.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted base is ready to support imposed loads and meets compaction requirements.

B. Verify lines and grades are correct.

3.02 PREPARATION

A. Properly prepare, shape and compact each section of subgrade before placing forms, reinforcing steel or concrete. After forms have been set to proper grade and alignment, use subgrade planer to shape subgrade to its final cross section. Check contour of subgrade with template.

B. Remove subgrade that will not support loaded form. Replace and compact subgrade to required density.

3.03 EQUIPMENT

A. Alternate equipment and methods, other than those required by this Section, may be used provided equal or better results will be obtained. Maintain equipment for preparing subgrade and for finishing and compacting concrete in good working order.

B. Subgrade Planer and Template:

1. Use subgrade planer with adjustable cutting blades to trim subgrade to exact section shown on Drawings. Select planer mounted on visible rollers which ride on forms. Planer frame must have sufficient weight so that it will remain on form, and have strength and rigidity that, under tests made by changing support from wheels to center, planer will not develop deflection of more than 1/8 inch. Tractors used to pull planer shall not produce ruts or indentations in subgrade. When slip form method of paving is used, operate subgrade planer on prepared track grade or have it controlled by electronic sensor system operated from string line to establish horizontal alignment and elevation of subbase.

2. Provide template for checking contour of subgrade. Template shall be long enough to rest upon side forms and have strength and rigidity that, when supported at center, maximum deflection shall not exceed 1/8 inch. Fit template with accurately adjustable rods projecting downward at 1 foot intervals. Adjust these rods to gauge cross sections of slab bottom when template is resting on side forms.

C. Machine Finisher: Provide power-driven, transverse finishing machine designed and operated to strike off and consolidate concrete. Machine shall have two screeds accurately adjusted to crown of pavement and with frame equipped to ride on forms. Use finishing machine with rubber tires when it operates on concrete pavement.

D. Hand Finishing:

1. Provide mechanical strike and tamping template 2 feet longer than width of pavement to be finished. Shape template to pavement section.

2. Provide two bridges to ride on forms and span pavement for finishing expansion and dummy joints. Provide floats and necessary edging and finishing tools.

E. Burlap Drag or transverse broom for Finishing Slab: Furnish four plies of 10 ounce burlap material fastened to bridge to form continuous strip of burlap full width of pavement. Maintain contact 3 foot width of burlap material with pavement surface. Keep burlap drags clean and free of encrusted mortar.

F. Vibrators: Furnish mechanically-operated, synchronized vibrators mounted on tamping bar which rides on forms and hand-manipulated mechanical vibrators. Furnish vibrators with frequency of vibration to provide maximum consolidation of concrete without segregation.

G. Traveling Form Paver: Approved traveling form paver may be used in lieu of construction methods employing forms, consolidating, finishing and floating equipment. Meet requirements of this specification for subgrade, pavement tolerances, pavement depth, alignments, consolidation, finishing and workmanship. When traveling form paver does not provide concrete paving that meets compaction, finish, and tolerance requirements of this Specification, immediately discontinue its use and use conventional methods.

1. Equip traveling paver with longitudinal transangular finishing float adjustable to crown and grade. Use float long enough to extend across pavement to side forms or edge of slab.

2. Ensure that continuous deposit of concrete can be made at paver to minimize starting and stopping. Use conventional means of paving locations inaccessible to traveling paver, or having horizontal or vertical curvature that traveling paver cannot negotiate.

3. Where Drawings require tie bars for adjacent paving, securely tie and support bars to prevent displacement. Tie bars may be installed with approved mechanical bar inserter mounted on traveling-form paver. Replace pavement in which tie bars assume final position other than that shown on Drawings.

3.04 FORMS

A. Side Forms: Use metal forms of approved shape and section. Preferred depth of form is equal to required edge thickness of pavement. Forms with depths greater or less than

required edge thickness of pavement will be permitted, provided difference between form depth and edge thickness when not greater than 1 inch, and further provided that forms of depth less than pavement edge are brought to required edge thickness by securely attaching wood or metal strips to bottom of form, or by grouting under form. Bottom flange of form shall be same size as thickness of pavement. Aluminum forms are not allowed. Forms shall be approved by Project Manager. Length of form sections shall be not less than 10 feet and each section shall provide for staking in position with not less than 3 pins. Flexible or curved forms of wood or metal of proper radius shall be used for curves of 200 foot radius or less. Forms shall have ample strength and shall be provided with adequate devices for secure setting so that when in-place they will withstand, without visible springing or settlement, impact and vibration of finishing machine. In no case shall base width be less than 8 inches for form 8 inches or more in height. Forms shall be free from warp, bends or kinks and shall be sufficiently true to provide straight edge on concrete. Top of each form section, when tested with straight edge, shall conform to requirements specified for surface of completed pavement. Provide sufficient forms for satisfactory placement of concrete. For short radius curves, forms less than 10 feet in length or curved forms may be used. For curb returns at street intersections and driveways, wood forms of good grade and quality may be used.

B. Form Setting:

1. Rest forms directly on subgrade. Do not shim with pebbles or dirt. Accurately set forms to required grade and alignment and, during entire operation of placing, compacting and finishing of concrete, do not deviate from this grade and alignment more than 1/8 inch in 10 feet of length. Do not remove forms for at least 8 hours after completion of finishing operations. Provide supply of forms that will be adequate for orderly and continuous placing of concrete. Set forms and check grade for at least 300 feet ahead of mixer or as approved by Project Manager.

2. Adjacent slabs may be used instead of forms, provided that concrete is well protected from possible damage by finishing equipment. Do not use adjacent slabs for forms until concrete has aged at least 7 days.

## 3.05 REINFORCING STEEL AND JOINT ASSEMBLIES

A. Place reinforcing steel and joint assemblies and position securely as indicated on Drawings. Wire reinforcing bars securely together at intersections and splices. Bars and coatings shall be free of rust, dirt or other foreign matter when concrete is placed. Secure reinforcing steel to chairs.

B. Position pavement joint assemblies at required locations and elevations, and rigidly secure in position. Install dowel bars in joint assemblies, each parallel to pavement surface and to center line of pavement, as shown.

C. Cut header boards, joint filler, and other material used for forming joints to receive each dowel bar.

D. Secure in required position to prevent displacement during placing and finishing of concrete.

E. Drill dowels into existing pavement, secure with epoxy, and provide paving headers as required to provide rigid pavement sections.

F. Use sufficient number of chairs for steel reinforcement bars to maintain position of bars within allowable tolerances. Place reinforcement as shown on Drawings. In plane of steel parallel to nearest surface of concrete, bars shall not vary from plan placement by more than 1/12 of spacing between bars. In plane of steel perpendicular to nearest surface of concrete, bars shall not vary from plan placement by more than 1/4 inch.

3.06 FIBROUS REINFORCING

A. Do not use fibrous reinforcing to replace structural, load-bearing, or moment-reinforcing steel.

3.07 PLACEMENT

A. Place concrete when air temperature taken in shade and away from artificial heat is above 35 degrees F and rising. Do not place concrete when temperature is below 40 degrees F and falling.

B. Place concrete within 90 minutes after initial water had been added. Remove and dispose of concrete not placed within this period.

C. Concrete slump during placement shall be 1 to 5 inches, except when using traveling-form paver, slump shall be maximum of 2 inches.

D. Deposit concrete continuously in successive batches. Distribute concrete in manner that will require as little rehandling as possible. Where hand spreading is necessary, distribute concrete with shovels or by other approved methods. Use only concrete rakes in handling concrete. At placement interruption of more than 30 minutes, place transverse construction joint at stopping point. Remove and replace sections less than 10 feet long.

E. Take special care in placing and spading concrete against forms and at longitudinal and transverse joints to prevent honeycombing. Voids in edge of finished pavement will be cause for rejection.

3.08 COMPACTION

A. Consolidate concrete using mechanical vibrators as specified herein. Extend vibratory unit across pavement, not quite touching side forms. Space individual vibrators at close enough intervals to vibrate and consolidate entire width of pavement uniformly. Mount mechanical vibrators to avoid contact with forms, reinforcement, transverse or longitudinal joints.

B. Furnish enough hand-manipulated mechanical vibrators for proper consolidation of concrete along forms, at joints and in areas not covered by mechanically controlled vibrators.

3.09 FINISHING

A. Finish concrete pavement with power-driven transverse finishing machines or by hand finishing methods.

1. Hand finish with mechanical strike and tamping template in same width as pavement to be finished. Shape template to pavement section shown on Drawings. Move strike template forward in direction of placement, maintaining slight excess of material in front of cutting edge. Make minimum of two trips over each area. Screed pavement surface to required section. Work screed with combined transverse and longitudinal motion in direction work is progressing. Maintain screed in contact with forms. Use longitudinal float to level surface.

B. On narrow strips and transitions, finish concrete pavement by hand. Thoroughly work concrete around reinforcement and embedded fixtures. Strike off concrete with strike-off screed. Move strike-off screed forward with combined transverse and longitudinal motion in direction work is progressing, maintaining screed in contact with forms, and maintaining slight excess of materials in front of cutting edge. Tamp concrete with tamping template. Use longitudinal float to level surface.

C. After completion of straightedge operation, make first pass of burlap drag or transverse broom as soon as construction operations permit and before water sheen has disappeared from surface. Follow with as many passes as required to produce desired texture depth. Permit no unnecessary delays between passes. Keep drag wet, clean and free from encrusted mortar during use.

3.10 JOINTS AND JOINT SEALING

A. Conform to requirements of Section 02752 - Concrete Pavement Joints.

3.11 CONCRETE CURING

A. Conform to requirements of Section 02753 - Concrete Pavement Curing.

3.12 TOLERANCES

A. Test entire surface before initial set and correct irregularities or undulations. Bring surface within requirements of following test and then finish. Place 10 foot straightedge parallel to center of roadway to bridge depressions and touch high spots. Do not permit ordinates measured from face of straight edge to surface of pavement to exceed 1/16 inch per foot from nearest point of contact. Maximum ordinate with 10 foot straightedge shall not exceed 1/8 inch. Grind spots in excess of required tolerances to meet surface test requirements. Restore texture by grooving concrete to meet surface finishing specifications.

3.13 FIELD QUALITY CONTROL

A. Perform testing under provisions of Section 01454 - Testing Laboratory Services.

B. Compressive Strength Test Specimens: Make four test specimens for compressive strength test in accordance with ASTM C 31 for each 150 cubic yards or less of pavement that is placed in one day. Test two specimens at 7 days or at number of hours as directed by the Project Manager for high early strength concrete. Test remaining two specimens at 28 days. Test specimens in accordance with ASTM C 39. Minimum compressive strength shall be 3000 pounds per square inch for first two specimens and 3500 pounds per square inch at 28 days.

C. When compressive test indicates failure, make yield test in accordance with ASTM C 138 for cement content per cubic yard of concrete. When cement content is found to be less than that specified per cubic yard, increase batch weights until amount of cement per cubic yard of concrete conforms to requirements.

D. Minimum of one 4 inch core will be taken at random locations per 375 feet per 12 feet lane or 500 square yards of pavement to measure in-place depth. Measure depth in accordance with ASTM C 174. Each core may be tested for 28 day compressive strength according to methods of ASTM C 42. 28 day compressive strength of each core tested shall be a minimum of 3000 pounds per square inch.

E. Request, at option, three additional cores in vicinity of cores indicating nonconforming in-place depths at no cost to City. In-place depth at these locations shall be average depth of four cores.

F. Fill cores and density test sections with new concrete paving or non shrink grout.

3.14 NONCONFORMING PAVEMENT

A. Remove and replace areas of pavement found deficient in thickness by more than 10 percent, or that fail compressive strength tests, with concrete of thickness shown on Drawings.

B. When measurement of any core is less than specified thickness by more than 10 percent, actual thickness of pavement in this area will be determined by taking additional cores at 10 foot intervals parallel to centerline in each direction from deficient core until, in each direction, core is taken which is not deficient by more than 10 percent. Exploratory cores for

deficient thickness will not be used in averages for adjusted unit price. Exploratory cores are to be used only to determine length of pavement in unit that is to be removed and replaced. Replace nonconforming pavement sections at no additional cost to City.

3.15 UNIT PRICE ADJUSTMENT

A. Unit price adjustments shall be made for in-place depth determined by cores as follows:

1. Adjusted Unit Price shall be ratio of average thickness as determined by cores to thickness bid upon, times unit price.

2. Apply adjustment to lower limit of 90 percent and upper limit of 100 percent of unit price.

3. Average depth below 90 percent but greater than 80 percent may be accepted by Project Manager at adjusted Unit Price of:

   a. Unit Price Bid - [2 x (1-ratio) x Unit Price Bid]

   b. Ratio equals average core thickness divided by thickness bid upon

   c. 0.9 ratio pays 80 percent of unit price and 0.8 ratio pays 60 percent of unit price.

4. Average depth below 80 percent will be rejected by Project Manager.

3.16 PAVEMENT MARKINGS

A. Restore pavement markings to match those existing in accordance with City of Houston standard specifications and details and Project Manager's requirements.

3.17 PROTECTION

A. Barricade pavement section to prevent use until concrete has attained minimum design strength. Cure barricade pavement section for minimum 72 hours before use. Do not open pavement to traffic until concrete is at least 10 days old. Pavement may be open to traffic earlier provided Contractor pays for testing and additional specimen once 7 day specified strength is obtained. Pavement may be opened when high early strength concrete is used meeting specified 72 hour strength.

B. High early strength concrete may be used to provide access at driveways, street intersections, esplanades and other locations approved by Project Manager.

C. On those sections of pavement to be opened to traffic, seal joints, clean pavement, and place earth against pavement edges before permitting use by traffic. Opening of pavement to traffic shall not relieve responsibility for Work.

D. Maintain concrete paving in good condition until completion of Work.

E. Repair defects by replacing concrete to full depth.

END OF SECTION

Section 02752

# CONCRETE PAVEMENT JOINTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Joints for concrete paving; concrete sidewalks, concrete driveways, curbs, and curb and gutters.

B. Saw-cutting existing concrete or asphalt pavements for new joints.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for street pavement expansion joints, with or without load transfer, is on linear foot basis.

2. Payment for horizontal dowels is on a unit price basis for each horizontal dowel.

3. No separate payment will be made for formed or sawed street pavement contraction joints and longitudinal weakened plane joints. Include payment in unit price for Concrete Paving.

4. No separate payment will be made for joints for Curb, Curb and Gutter, Saw-tooth Curb, Concrete Sidewalks, and Concrete Driveways. Include payment in unit price for Curb and Gutter, Concrete Sidewalks, and Concrete Driveways.

5. Payment will be made for Preformed Expansion Joints on a linear foot basis only when field conditions require that sidewalk be moved adjacent to existing concrete structure (i.e., street, back of curb, etc.).

6. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

B. ASTM D 994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

C. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

D. ASTM D 3405 - Standard Specification for Joint Sealants, Hot-Applied, for Concrete and Asphalt Pavements.

E. TxDOT Tex-525-C - Tests for Asphalt and Concrete Joint Sealers

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit product data for joint sealing compound and proposed sealing equipment for approval.

C. Submit samples of dowel cup, metal supports, and deformed metal strip for approval. Submit manufacturer's recommendation for placing sealant(s).

PART 2 PRODUCTS

2.01 BOARD EXPANSION JOINT MATERIAL

A. Filler board of selected stock. Use wood of density and type as follows:

1. Clear, all-heart cypress weighing no more than 40 pounds per cubic foot, after being oven dried to constant weight.

2. Clear, all-heart redwood weighing no more than 30 pounds per cubic foot, after being oven dried to constant weight.

2.02 PREFORMED EXPANSION JOINT MATERIAL

A. Bituminous fiber and bituminous mastic composition material conforming to ASTM D 994 and ASTM D 1751.

2.03 JOINT SEALING COMPOUND

A. Conform joint sealants to one of sealant classes described in this section.

B. Conform hot-poured rubber-asphalt compound to ASTM D 3405.

C. Two-component Synthetic Polymer.

1. Curing is to be by polymerization and not by evaporation of solvent or fluxing of harder particles.

2. Cure sufficiently at average temperature of 25 ∀ 1 C (77 ∀ 2 F) so as not to pick up under wheels of traffic in maximum three hours.

3. Performance requirements, when tested in accordance with TxDOT Tex-525-C, shall meet above curing times and requirements as follows:

| **Cold-Extruded and Cold-Pourable (Self-Leveling) Specifications** | |
|---|---|
| **Property** | **Requirement** |
| Penetration, 25 C (77 F) 150 g Cone, 5 s, 0.1 mm (in.), maximum | 130 |
| Bond and Extension 50%, -29 C (-20 F), 3 cycles:<br>X Dry Concrete Block<br>X Steel blocks (Primed, if recommended by manufacturer)<br>*Steel blocks shall be used when armor joints are specified | <br>Pass<br>Pass |
| Flow at 70 C (158 F) | None |
| Water content % by mass, maximum | 5.0 |
| Resilience:<br>X Original sample, % min. (cured)<br>X Oven-aged at 70 C (158 F), % min. | <br>50<br>50 |
| Cold-extruded material only - Cold Flow (10 minutes) | None |

After bond and extension test, there shall be no evidence of cracking, separation or other opening that is over 3 millimeters (1/8 inch) deep in sealer or between sealer and test blocks.

4. Provide cold-extruded type for vertical or sloping joints.

5. Provide self-leveling type for horizontal joints.

D. Self-Leveling, Low Modulus Silicone or Polyurethane Sealant for Asphaltic Concrete and Portland Cement Concrete Joints. This shall be a single component self-leveling silicone or polyurethane material that is compatible with both asphalt and concrete pavements. The sealer shall not require a primer for bond; a backer rod shall be required which is compatible with the sealant; no reaction shall occur between rod and sealant.

When tested in accordance with TxDOT Tex-525-C, self-leveling sealant shall meet following requirements:

| Self-Leveling, Low Modulus Silicone or Polyurethane Sealant | |
|---|---|
| **Property** | **Requirements** |
| Tack Free Time, 25 ∀ 1 C (77 ∀ 2 F), minutes | 120 maximum |
| Nonvolatile content, % by mass | 93 minimum |
| Tensile Strength and 24 Hour Extension Test:<br>X Initial, 10-day cure, 25 ∀ 1 C (77 ∀ 2 F), kPa (psi)<br>X After Water Immersion, kPa (psi)<br>X After Heat Aging, kPa (psi)<br>X After Cycling, -29 C (-20 F), 50%, 3 cycles, kPa (psi)<br>X 24 Hour Extension | <br>X 21 to 69 (3 to 10)<br>X 21 to 69 (3 to 10)<br>X 21 to 69 (3 to 10)<br>X 21 to 69 (3 to 10)<br>X Pass (All Specimens)<br>After 24 hours, there shall be no evidence of cracking, separation or other opening that is over 3 mm (1/8 in.) deep at any point in the sealer or between the sealer and test blocks. |

2.04 LOAD TRANSMISSION DEVICES

A. Smooth, steel dowel bars conforming to ASTM A 615, Grade 60. When indicated on Drawings, encase one end of dowel bar in approved cap having inside diameter 1/16 inch greater than diameter of dowel bar.

B. Deformed steel tie bars conforming to ASTM A 615, Grade 60.

2.05 SUPPORTS FOR REINFORCING STEEL AND JOINT ASSEMBLY

A. Employ supports of approved shape and size that will secure reinforcing steel and joint assembly in correct position during placing and finishing of concrete. Space supports as directed by Project Manager.

PART 3 EXECUTION

3.01 PLACEMENT

A. When new Work is adjacent to existing concrete, place joints at same location as existing joints in adjacent pavement.

B. If limit of removal of existing concrete or asphalt pavement does not fall on existing joint, saw cut existing pavement minimum of 2 inches deep to provide straight, smooth joint surface without chipping, spalling or cracks.

3.02 CONSTRUCTION JOINTS

A. Place transverse construction joint wherever concrete placement must be stopped for more than 30 minutes. Place longitudinal construction joints at interior edges of pavement lanes using No. 6 deformed tie bars, 30 inches long and spaced 18 inches on centers.

3.03 EXPANSION JOINTS

A. Place 3/4 inch expansion joints at radius points of curb returns for cross street intersections, or as located in adjacent pavement but no further than 80 feet apart. Use no boards shorter than 6 feet. When pavement is 24 feet or narrower, use not more than 2 lengths of board. Secure pieces to form straight joint. Shape board filler accurately to cross section of concrete slab. Use load transmission devices of type and size shown on Drawings unless otherwise specified or shown as "No Load Transfer Device." Seal with joint sealing compound.

3.04 CONTRACTION JOINTS

A. Place contraction joints at same locations as in adjacent pavement or at spaces indicated on Drawings. Place smoothed, painted and oiled dowels accurately and normal to joint. Seal groove with joint sealing compound.

3.05 LONGITUDINAL WEAKENED PLANE JOINTS

A. Place longitudinal weakened plane joints at spaces indicated on Drawings. If more than 15 feet in width is poured, longitudinal joint must be saw cut. Seal groove with joint sealing compound.

3.06 SAWED JOINTS

A. Use sawed joints as alternate to contraction and weakened plane joints. Use circular cutter capable of cutting straight line groove minimum of 1/4 inch wide. Maintain depth of one quarter of pavement thickness. Commence sawing as soon as concrete has hardened sufficiently to permit cutting without chipping, spalling or tearing and prior to initiation of cracks. Once sawing has commenced, continue until completed. Make saw cut with one pass. Complete sawing within 24 hours of concrete placement. Saw joints at required spacing consecutively in sequence of concrete placement.

B. Concrete Saw: Provide sawing equipment adequate in power to complete sawing to required dimensions and within required time. Maintain ample supply of saw blades at work site during sawing operations. Maintain sawing equipment on job during concrete placement.

3.07 JOINTS FOR CURB, CURB AND GUTTER

A. Place 3/4 inch preformed expansion joints through curb and gutters at locations of expansion and contraction joints in pavement, at end of radius returns at street intersections and driveways, and at curb inlets. Maximum spacing shall be 120-foot centers.

3.08 JOINTS FOR CONCRETE SIDEWALKS

A. Provide 3/4 inch expansion joints conforming to ASTM A 1751 along and across sidewalk at back of curbs, at intersections with driveways, steps, and walls; and across walk at intervals not to exceed 36 feet. Provide expansion joint material conforming to ASTM D 994 for small radius curves and around fire hydrants and utility poles. Extend expansion joint material full depth of slab.

3.9 JOINTS FOR CONCRETE DRIVEWAYS

A. Provide 3/4-inch expansion joints conforming to ASTM D 1751 across driveway in line with street face of sidewalks, at existing concrete driveways, and along intersections with sidewalks and other structures. Extend expansion joint material full depth of slab.

3.10 JOINT SEALING

A. Seal joints only when surface and joints are dry, ambient temperature is above 50 degrees F and less than 85 degrees F and weather is not foggy or rainy.

B. Use joint sealing equipment in like new working condition throughout joint sealing operation, and be approved by Project Manager. Use concrete grooving machine or power-operated wire brush and other equipment such as plow, brooms, brushes, blowers or hydro or abrasive cleaning as required to produce satisfactory joints.

C. Clean joints of loose scale, dirt, dust and curing compound. The term joint includes wide joint spaces, expansion joints, dummy groove joints or cracks, either preformed or natural. Remove loose material from concrete surfaces adjacent to joints.

D. Fill joints neatly with joint sealer to depth shown. Pour sufficient joint sealer into joints so that, upon completion, surface of sealer within joint will be 1/4 inch above level of adjacent surface or at elevation as directed.

3.11 PROTECTION

A. Maintain joints in good condition until completion of Work.

B. Replace damaged joints material with new material as required by this Section.

END OF SECTION

Section 02753

# CONCRETE PAVEMENT CURING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Curing of Portland cement concrete paving.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for concrete curing under this Section. Include payment in unit price for Concrete Paving, Concrete Sidewalks, Concrete Driveways, Curbs, and Curb and Gutters.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM C 156 - Standard Test Method for Water Retention by Concrete Curing Materials.

B. ASTM C 171 - Standard Specifications for Sheet Materials for Curing Concrete.

C. ASTM C 309 - Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete.

### 1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturer's product data for cover materials and liquid membrane-forming compounds.

## PART 2 PRODUCTS

### 2.01 COVER MATERIALS FOR CURING

A. Conform curing materials to one of the following:

1. Polyethylene Film: Opaque pigmented white film conforming to requirements of ASTM C 171.

2. Waterproofed Paper: Paper conforming to requirements of ASTM C 171.

3. Cotton Mats: Single layer of cotton filler completely enclosed in cover of cotton cloth. Mats shall contain not less than 3/4 of a pound of uniformly distributed cotton filler per square yard of mat. Cotton cloth used for covering materials shall weigh not less than 6 ounces per square yard. Stitch mats so that mat will contact surface of pavement at all points when saturated with water.

2.02 LIQUID MEMBRANE-FORMING COMPOUNDS

A. Conform liquid membrane-forming compounds to ASTM C 309. Membrane shall restrict loss of water to not more than 0.55 $kg/m^2$ in 72 hours using test method ASTM C 156.

PART 3 EXECUTION

3.01 CURING REQUIREMENT

A. Cure concrete pavement by protecting against loss of moisture for period of not less than 72 hours immediately upon completion of finishing operations. Do not use membrane curing for concrete pavement to be overlaid by asphalt concrete.

B. Failure to provide sufficient cover material shall be cause for immediate suspension of concreting operations.

3.02 POLYETHYLENE FILM CURING

A. Immediately after finishing surface, and after concrete has taken its initial set, apply water in form of fine spray. Cover surface with polyethylene film so film will remain in direct contact with surface during specified curing period.

B. Cover entire surface and both edges of pavement slab. Overlap joints in film sheets minimum of 12 inches. Immediately repair tears or holes occurring during curing period by placing acceptable moisture-proof patches or replacing.

3.03 WATERPROOFED PAPER CURING

A. Immediately after finishing surface, and after concrete has taken its initial set, apply water in form of fine spray. Cover surface with waterproofed paper so paper will remain in direct contact with surface during specified curing period.

B. Prepare waterproofed paper to form blankets of sufficient width to cover entire surface and both edges of pavement slab, and not be more than 60 feet in length. Overlap joints in blankets caused by joining paper sheets not less than 5 inches and securely seal with asphalt cement having melting point of approximately 180 degrees F. Place blankets to secure overlap of at least 12 inches. Immediately repair tears or holes appearing in paper during curing period by cementing patches over defects.

3.04 COTTON MAT CURING

A. Immediately after finishing surface, and after concrete has taken its initial set, completely cover surface with cotton mats, thoroughly saturated before application, maintaining contact with surface of pavement equally at all points.

B. Keep mats on pavement for specified curing period. Keep mats saturated so that, when lightly compressed, water will drip freely from them. Keep banked earth or cotton mat covering edges saturated.

3.05 LIQUID MEMBRANE-FORMING COMPOUNDS

A. Immediately after free surface moisture, and after concrete has dispersed, apply liquid membrane-forming compound in accordance with manufacturer's instructions.

B. Moisten concrete by water fogging prior to application of membrane when surface has become dry.

C. Seal concrete surface with single coat at rate of coverage recommended by manufacturer and directed by Project Manager, but not less than one gallon per 200 square feet of surface area.

3.06 TESTING MEMBRANE

A. Treated areas will be visually inspected for areas of lighter color of dry concrete as compared to dump concrete. Test suspected areas by placing few drops of water on surface. Membrane passes test when water stands in rounded beads or small pools which can be blown along surface of concrete without wetting surface.

B. Reapply membrane compound immediately at no cost to City when membrane fails above test.

END OF SECTION

# SUPPLEMENTARY SPECIFICATIONS
## Section 02754 (S)

## CONCRETE DRIVEWAYS

**The following supplement adds to Specification Section 02754. Where a portion of the Specifications is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.**

Delete Paragraph 2.01 E and replace with the following:

Subgrade Materials

1. All subgrade material that is disturbed in the replacement of existing Commercial Concrete Driveways shall be repaired with compacted cement stabilized sand to provide the required six-inch (6") Commercial Driveway Subgrade thickness.

2. All bedding for Residential Concrete Driveways shall conform to subgrade material requirements for bank run sand of Section 02320 – Utility Backfill Materials. Thickness of sand bed for Residential Concrete Driveways shall be three inches (3") in depth.

END OF SUPPLEMENT

Approved by:

Frank O. Simoneaux, Jr., P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

8-28-09
Date

Section 02754

# CONCRETE DRIVEWAYS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Portland cement concrete driveways.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for concrete driveways is on square foot basis, including excavation.

2. No payment will be made for work in areas where driveway has been removed or replaced for Contractor's convenience.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Concrete: Conform to material and proportion requirements for concrete of Section 02751 - Concrete Paving.

B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 02751 - Concrete Paving.

C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02752 - Concrete Pavement Joints.

D. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 02752 - Concrete Pavement Joints.

E. Subgrade Materials: Conform to subgrade material requirements of Section 02336 - Lime Stabilized Subgrade, Section 02337 - Lime/Fly-Ash Stabilized Subgrade, or Section 02338 - Portland Cement Stabilized Subgrade.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Prepare subgrade in accordance with applicable portions of Section 02336 - Lime Stabilized Subgrade, Section 02337 - Lime/Fly-Ash Stabilized Subgrade, and Section 02338 - Portland Cement Stabilized Subgrade.

### 3.02 PLACEMENT

A. Place and finish concrete in accordance with applicable portions of Section 02751 - Concrete Paving.

### 3.03 JOINTS

A. Install joints in concrete driveway in accordance with Section 02752 - Concrete Pavement Joints.

### 3.04 CONCRETE CURING

A. Cure concrete driveway in accordance with Section 02753 - Concrete Pavement Curing.

### 3.05 PROTECTION

A. Conform to applicable requirements of Section 02753 - Concrete Pavement Curing.

END OF SECTION

SUPPLEMENTARY SPECIFICATION

Section 02761-S

COLORED CONCRETE FOR MEDIANS AND SIDEWALKS

The following supplement modifies Specification Section 02761. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.

Part 1. Paragraph 1.02 A - insert line 3:

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

3. Staining of existing curb ramps is paid per square foot of Staining of Existing Ramps and /orCurb Ramps, Unit Item No.02761 (S).

Part 3. – insert Item 3.04 as follows:

3.04 A. Materials: Poly top Seal, ST-20/ (Csx-20 Stain). Color is (ADA) Brick Red. Water based membrane forming polysiloxane penetrating sealer; this system is non-flammable, hazardous and non-toxic.

a. Maximum VOC content: 0.27 lbs/gal., complies with applicable regulations regarding VOC's.

b. Do not dilute or modify ST-20 or Csx-20, apply as supplied.

B. Project Conditions: Environmental Requirements: Do not apply Poly Top Seal. Csx-20 when the following conditions are present, except with written instructions from manufacturer:

a. Ambient or surface temperature less than 40 degrees F or predicted to fall below 40 degrees F within twenty-four (24) hours prior to application.

b. Rain within seventy-two (72) hours prior to application or predicted within twenty-four (24) hours after application.

c. Wet or frozen substrates.

d. Poured/Cast in Place substrates: Allow to cure seven (7) to ten (10) days before treatment. (Based on 70 degrees F and 60% relative humidity).

END OF SUPPLEMENT

Approved by:

Frank O. Simoneaux, Jr., P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

8-28-09
Date

Section 02761

# COLORED CONCRETE FOR MEDIANS AND SIDEWALKS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Colored concrete for medians and sidewalks.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for coloring agent under this Section. Include payment in unit price bid for concrete sidewalks, and concrete medians and directional islands.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit product data for proposed coloring agent.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Coloring Agent: Provide dry-shake color hardener consisting of quartz-silica mixture of finely-graded, non-metallic aggregates, plasticizer and cement binder for producing color as shown on Drawings.

B. Concrete: Conform to material and proportion requirements of Section 02751 - Concrete Paving.

## PART 3 EXECUTION

### 3.01 CONCRETE MEDIANS

A. Install concrete medians in accordance with requirements of Part 3 of Section 02772 - Concrete Medians and Directional Islands with addition of procedure for application of coloring agent as required by Paragraph 3.03, Coloring Agent.

### 3.02 CONCRETE SIDEWALKS

A. Install concrete sidewalks in accordance with requirements of Part 3 of Section 02775 - Concrete Sidewalks with addition of procedure for application of coloring agent as required by Paragraph 3.03, Coloring Agent.

### 3.03 COLORING AGENT

A. Apply coloring agent on newly finished concrete surface as soon as job conditions permit, but in no event later than 2 hours after concrete is placed, at rate recommended by manufacturer and approved by Project Manager.

B. Apply color hardener uniformly to surface by dry-shake method when no excess moisture shows at surface of concrete substrate, but while concrete is still plastic throughout. Do not sprinkle or otherwise add water to surface during application or finishing. Necessary moisture for color hardener shall come from concrete substrate in order to develop proper bond and assure adequate density for color-hardened surface.

C. First shake shall consume two-thirds of material. Withhold one-third for second shake and final touch-up. After first shake, float surface thoroughly by mechanical or hand methods. Do not trowel surface between first and second shakes.

D. Apply second shake evenly, then float and trowel surface. Retain small quantity of material from second shake for touching up nonuniform or weak-toned areas. Minimize hard troweling and use consistent finishing practices to ensure uniformity of color.

END OF SECTION

## SUPPLEMENTARY SPECIFICATIONS
## Section 02771 (S)

## CURB, CURB AND GUTTER, AND HEADERS

**The following supplement adds to Specification Section 02771. Where a portion of the Specifications is modified or deleted by this Supplementary Specification, the unaltered port of the Specification shall remain in effect.**

Paragraph 1.01 – delete line A and replace with the following:

1.01 SECTION INCLUDES
A. Reinforced concrete curb, reinforced monolithic curb and gutter, mountable cu reinforced concrete saw-tooth curb.

Paragraph 1.02A – delete line 1 and replace with the following:

1.02 MEASUREMENT AND PAYMENT
A. Unit Prices
1. Payment for curb and for curb and gutter is on a linear foot basis measured along face of curb. Payment for saw-tooth curb includes concr base.

END OF SUPPLEMENT

Approved by:

8-28-09
Date

Frank O. Simoneaux, Jr., P.E.
Managing Engineer
Engineering Branch
Engineering and Construction Division
Department of Public Works and Engineering

Section 02771

# CURB, CURB AND GUTTER, AND HEADERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Reinforced concrete curb, reinforced monolithic concrete curb and gutter, and mountable curb.

B. Paving headers and railroad headers poured monolithically with concrete base or pavement.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for curbs, curbs and gutter, and esplanade curbs is on linear foot basis measured along face of curb.

2. Payment for 3 foot concrete valley gutter is on a linear foot basis.

3. Payment for mountable concrete curbs is on a square foot basis.

4. Payment for concrete paving headers and concrete railroad headers is on a linear foot basis.

5. Payment for headers is on linear foot basis measured between lips of gutters adjacent to concrete base and measured between backs of curbs adjacent to concrete pavement.

6. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit details of proposed form work for approval.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Concrete: Conform to material and proportion requirements for concrete of Section 02751 - Concrete Paving.

B. Reinforcing Steel: Conform to material requirements for welded wire fabric of Section 02751 - Concrete Paving.

C. Grout: Nonmetallic, nonshrink grout containing no chloride producing agents conforming to following requirements.

1. Compressive strength

   a. at 7 days: 3500 psi

   b. at 28 days: 8000 psi

2. Initial set time: 45 minutes

3. Final set time: 1.5 hours

D. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02752 - Concrete Pavement Joints.

E. Expansion Joint Filler: Conform to material requirements for expansion joint filler of Section 02752 - Concrete Pavement Joints.

F. Mortar: Mortar finish composed of one part Portland cement and 1 1/2 parts of fine aggregate. Use only when approved by Project Manager.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Prepare subgrade in accordance with applicable portions of sections on excavation and fill, embankment, and subgrade and roadbed.

### 3.02 PLACEMENT

A. Guideline: Set to follow top line of curb. Attach indicator to provide constant comparison between top of curb and guideline. Ensure flow lines for monolithic curb and gutters conform to slopes indicated on Drawings.

B. Forms: Brace to maintain position during pour. Use metal templates cut to section shown on Drawings.

C. Reinforcement: Secure in position so that steel will remain in place throughout placement. Reinforcing steel shall remain at approximate center of base or pavement as indicated on Drawings.

D. Joints: Place in accordance with Section 02752 - Concrete Pavement Joints. Place dummy groove joints at to match concrete pavement joints at right angles to curb lines. Cut dummy grooves 1/4 inch deep using approved edging tool.

E. Place concrete in forms to required depth. Consolidate thoroughly. Do not permit rock pockets in form. Entirely cover top surfaces with mortar.

3.03 MANUAL FINISHING

A. After concrete is in place, remove front curb forms. Form exposed portions of curb, and of curb and gutter, using mule which conforms to curb shape, as shown on Drawings.

B. Thin coat of mortar may be worked into exposed face of curb using mule and two-handled wooden darby at least 3 feet long.

C. Before applying final finish move 10 foot straightedge across gutter and up curb to back form of curb. Repeat until curb and gutter are true to grade and section. Lap straightedge every 5 feet.

D. Steel trowel finish surfaces to smooth, even finish. Make face of finished curb true and straight.

E. Edge outer edge of gutter with 1/4 inch edger. Finish edges with tool having 1/4 inch radius.

F. Finish visible surfaces and edges of finished curb and gutter free from blemishes, form marks and tool marks. Finished curb or curb and gutter shall have uniform color, shape and appearance.

3.04 MECHANICAL FINISHING

A. Mechanical curb forming and finishing machines may be used instead of, or in conjunction with, previously described methods, when approved by Project Manager. Use of mechanical methods shall provide specified curb design and finish.

3.05 CURING

A. Immediately after finishing operations, cure exposed surfaces of curbs and gutters in accordance with Section 02753 - Concrete Pavement Curing.

3.06 TOLERANCES

A. Top surfaces of curb and gutter shall have uniform width and shall be free from humps, sags or other irregularities. Surfaces of curb top, curb face and gutter shall not vary more than 1/8 inch from edge of straightedge laid along them, except at grade changes.

3.07 PROTECTION

A. Maintain curbs and gutters in good condition until completion of Work.

B. Replace damaged curbs and gutters to comply with this Section.

END OF SECTION

Section 02775

# CONCRETE SIDEWALKS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Reinforced concrete sidewalks.

B. Wheelchair ramps.

C. Reinforced slope paving.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for concrete sidewalks is on square foot basis.

2. No payment will be made for work outside these limits or in areas where driveway has been removed or replaced for Contractor's convenience.

3. Payment for wheelchair ramps of each type specified is on square foot basis. Removal and replacement of existing sidewalk, curb or curb and gutter and saw-cutting is paid by unit cost for each item. Sodding will be paid one foot on each side of sidewalk unless otherwise noted. Staining of wheelchair ramps is included in cost of ramp.

4. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in Field.

B. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

C. ASTM C 42 - Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

D. ASTM C 138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.

E. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.

F. ASTM C 172 - Standard Practice for Sampling Freshly Mixed Concrete.

G. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft$^3$ (600 kN-m/m$^3$).

H. Texas Accessibility Standards of Architectural Barriers Act, Article 9102, Texas Civil Statues.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit certified testing results and certificates of compliance.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete: Conform to material and proportion requirements for concrete of Section 02751 - Concrete Paving.

B. Reinforcing Steel: Conform to material requirements of Section 02751 - Concrete Paving for reinforcing steel. Use No. 3 reinforcing bars.

C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02752 - Concrete Pavement Joints.

D. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 02752 - Concrete Pavement Joints.

E. Forms: Use straight, unwarped wood or metal forms with nominal depth equal to or greater than proposed sidewalk thickness. The use of 2 inch by 4 inch lumber as forms will not be allowed.

F. Sand Bed: Conform to material requirements for bank run sand of Section 02320 - Utility Backfill Materials.

G. Sodding: Conform to material requirements for sodding of Section 02922 - Sodding.

H. Coloring for wheelchair ramps: Conform to material requirements for colored concrete of Section 02761 - Colored Concrete for Medians and Sidewalks. Color shall be Brick Red or as shown on the drawings.

## PART 3 EXECUTION

### 3.01 REPLACEMENT

A. Replace sidewalks and slope paving which are removed or damaged during construction with thickness and width equivalent to one removed or damaged, unless otherwise shown on Drawings. Finish surface (exposed aggregate, brick pavers, etc.) to match existing sidewalk.

B. Provide replaced and new sidewalks with wheelchair ramps when sidewalk intersects curb at street or driveway.

### 3.02 PREPARATION

A. Identify and protect utilities which are to remain.

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

C. Conduct clearing and grubbing operations in accordance with Section 02233 - Clearing and Grubbing.

D. Excavate subgrade 6 inches beyond outside lines of sidewalk. Shape to line, grade and cross section. For soils with plasticity index above 40 percent, stabilize soil with lime in accordance with Section 02336 – Lime-Stabilized Subgrade. Compact subgrade to minimum of 90 percent maximum dry density at optimum to 3 percent above optimum moisture content, as determined by ASTM D 698.

E. Immediately after subgrade is prepared, cover with compacted sand bed to depth as shown on Drawings. Lay concrete when sand is moist but not saturated.

### 3.03 PLACEMENT

A. Setting Forms: Straight, unwarped wood or metal forms with nominal depth equal to or greater than proposed sidewalk thickness. Use of 2 by 4's as forms will not be allowed. Securely stake forms to line and grade. Maintain position during concrete placement.

B. Reinforcement:

1. Install reinforcing bars.

2. Install reinforcing steel as shown on the drawings. Lay longitudinal bars in walk

continuously, except through expansion joints.

3. Use sufficient number of chairs to support reinforcement in manner to maintain reinforcement in center of slab vertically during placement.

4. Drill dowels into existing paving, sidewalk and driveways, secure with epoxy, and provide headers as required.

5. Use sufficient number of chairs for steel reinforcement bars to maintain position of bars within allowable tolerances. Place reinforcement as shown on Drawings. In plane of steel parallel to nearest surface of concrete, bars shall not vary from plan placement by more than 1/12 of spacing between bars. In plane of steel perpendicular to nearest surface of concrete, bars shall not vary from plan placement by more than 1/4 inch.

C. Expansion Joints: Install expansion joints with load transfer units in accordance with Section 02752 - Concrete Pavement Joints.

E. Place concrete in forms to specified depth and tamp thoroughly with "jitterbug" tamp, or other acceptable method. Bring mortar to surface.

F. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across sidewalk lightly with fine-haired brush.

G. Apply coating to wheelchair ramp with contrasting color in accordance with Section 02761 - Colored Concrete for Medians and Sidewalks.

H. Unless otherwise indicated on Drawings, mark off sidewalk joints 1/8 inch deep, at spacing equal to width of walk. Use joint tool equal in width to edging tool.

I. Finish edges with tool having 1/4 inch radius.

J. After concrete has set sufficiently, refill space along sides of sidewalk to one-inch from top of walk with suitable material. Tamp until firm and solid, place sod as applicable. Dispose of excess material in accordance with Section 01576 - Waste Material Disposal. Repair driveways and parking lots damaged by sidewalk excavation in accordance with Section 02951 - Pavement Repair and Resurfacing.

3.04 CURING

A. Conform to requirements of Section 02753 - Concrete Pavement Curing.

3.05 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01454 - Testing Laboratory Services.

B. Compressive Strength Test Specimens: Four test specimens for compressive strength test will be made in accordance with ASTM C 31 for each 30 cubic yards or less of sidewalk that is placed in one day. Two specimens will be tested at 7 days. Remaining two specimens will be tested at 28 days. Specimens will be tested in accordance with ASTM C 39. Minimum compressive strength: 2500 psi at 7 days and 3000 psi at 28 days.

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

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

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

F. Take slump tests when cylinders are made and when concrete slump appears excessive.

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

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

I. If 28 day laboratory test indicates that concrete of low strength has been placed, test concrete in question by taking cores as directed by Project Manager. Take and test at least three representative cores as specified in ASTM C 42 and deduct cost from payment due.

3.06 NONCONFORMING CONCRETE

A. Remove and replace areas that fail compressive strength tests, with concrete of thickness shown on Drawings.

B. Replace nonconforming sections at no additional cost to City.

3.07 PROTECTION

A. Maintain newly place concrete in good condition until completion of Work.

B. Replace damaged areas.

END OF SECTION

Section 02811

# LANDSCAPE IRRIGATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Pipe and fittings, valves, sprinkler heads, and accessories.

B. Control system.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for landscape irrigation will be made under this Section on lump sum basis.

2. Payment for capped irrigation sleeve, for connection to future system expansion, is on linear foot basis.

3. Refer to Section 01270 - Measurement and Payment.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ANSI/ASTM D 2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.

B. ASTM D 2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure - Rated Pipe (SDR Series).

### 1.04 SYSTEM DESCRIPTION

A. Electric solenoid controlled underground irrigation system.

B. Source Power: 120 volt

### 1.05 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in performing work of this section with minimum three years documented experience.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for piping and component requirements.

1.08 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work of this Section.

1.09 COORDINATION

A. Coordinate work with site landscape grading and delivery of plant life.

1.10 EXTRA MATERIALS

A. Furnish extra components under provisions of Section 00410 - Bid Form.

1. Two sprinkler heads of each type and size.
2. Two valve box keys.
3. Two wrenches for each type head core and for removing and installing each type head.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

A. Pipe shall be continuously and permanently imprinted with manufacturer's name, size, schedules, type, and working pressure.

B. PVC Pipe ASTM D 2241; 200 psi pressure rated upstream from controls, 160 psi downstream; solvent welded sockets rubber gasket joints.

C. Fittings: Type and style of connection to match pipe.

D. Solvent Cement: ANSI/ASTM D 2564 for PVC pipe and fittings.

E. Sleeve material: 4 inch schedule 40 PVC.

2.02 OUTLETS

A. Manufacturer's or approved equal:

1. Rainbird Model 1804.

2. Rainbird Model 1812

3. Hunter Model PGP

B. Rotary type sprinkler head: Pop-up type with screens; fully adjustable for flow and pressure; size as indicated; with letter or symbol designating degree of arc and arrow indicating center of spray pattern.

C. Spray Type Sprinkler Head: Pop-up head with full circle, half circle, third circle, quarter circle, and square pattern.

2.03 VALVES

A. Manufacturer's or approved equal:

1. Rainbird Model PEB Series

B. Gate Valves: Bronze construction, non-rising stem, and sized to line.

C. Backflow Preventers: FEBCO 765 Bronze body construction, reduced pressure zone or pressure vacuum breaker type.

D. Valve Box and Cover: rectangular 10 inches by 4 inches or 9 inches round.

2.04 CONTROLLER

A. Manufacturer's or approved equal:

1. Rainbird Model RC1260C

B. Valves: Electric solenoid wiring including required fittings and accessories.

C. Wire conductors: color coded.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify site conditions under provisions of Section 01312 - Coordination and Meetings.

B. Verify location of existing utilities.

C. Verify that required utilities are available, in proper location, and ready for use.

### 3.02 PREPARATION

A. Piping layout indicated is diagrammatic only. Route piping to avoid plants, ground cover, and structures.

B. Layout and stake locations of system components.

C. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system.

### 3.03 TRENCHING

A. Trench and filling as required.

B. Trench size:

1. Minimum cover over installed supply piping: 18 inches.
2. Minimum cover over installed branch piping: 12 inches.
3. Minimum cover over installed outlet piping: 12 inches.

C. Trench to accommodate grade changes.

D. Maintain trenches free of debris, material, or obstructions that may damage pipe.

E. Do not leave trenches open overnight.

### 3.04 INSTALLATION

A. Install pipe, valves, controls, and outlets in accordance with manufacturer's instructions.

B. Connect to utilities.

C. Set outlets and box covers at finish grade elevations.

D. Install control wiring as required. Provide 10-inch expansion coil at each valve to which controls are connected, and at 100 foot intervals. Bury wire beside pipe. Mark valves with neoprene valve markers containing locking device. Set valve markers in 160 psi PVC pipe risers exiting from top of valve to finish grade.

E. After piping is installed, but before outlets are installed and filling commences, open valves and flush system with full head of water.

F. Coordinate pipe installation with conduit installation.

3.05 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed.

B. Prior to filling, test system for leakage for whole system to maintain 100 psi pressure for one hour.

3.06 FILLING

A. Cover with 3 inches of sand over piping; fill trench and compact to subgrade elevation. Protect piping from displacement.

3.07 ADJUSTING

A. Adjust control system to achieve time cycles required.

B. Change and adjust head types for full water coverage as directed.

3.08 DEMONSTRATION

A. Demonstrate system under provisions of Section 01755 - Starting Systems.

B. Instruct City's personnel in operation and maintenance of system, including adjusting of sprinkler heads. Use operation and maintenance material as basis for demonstration.

END OF SECTION

Section 02911

# TOPSOIL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Furnishing and placing topsoil for finish grading and for seeding, sodding, and planting.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for topsoil under this Section. Include payment in Section 02921 - Hydro-mulch Seeding or Section 02922 - Sodding.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

## PART 2 PRODUCTS

### 2.01 TOPSOIL

A. Topsoil shall be fertile, friable, natural sandy loam surface soil obtained from excavation or borrow operations having following characteristics:

1. pH value of between 5.5 and 6.5

2. Liquid limit: 50 or less

3. Plasticity index: 20 or less

4. Gradation: maximum of 10 percent passing No. 200 sieve

B. Topsoil shall be reasonably free of subsoil, clay lumps, weeds, non-soil materials, and other litter or contamination. Topsoil shall not contain roots, stumps, and stones larger than 2 inches.

C. Obtain topsoil from naturally well-drained areas where topsoil occurs at minimum depth of 4 inches and has similar characteristics to that found at placement site. Do not obtain topsoil from areas infected with growth of, or reproductive parts of nut grass or other noxious weeds.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Excavate topsoil for esplanades and areas to receive grass or landscaping from areas to be further excavated. Stockpile in area approved by Project Manager.

B. Stockpile topsoil to depth not exceeding 8 feet. Cover to protect from erosion.

### 3.02 TOPSOIL EXCAVATION

A. Conform to excavation and stockpiling requirements of Section 02315 - Roadway Excavation.

### 3.03 PLACEMENT

A. Place no topsoil until subgrade has been approved. For areas to be seeded or sodded, scarify or plow existing material to minimum depth of 4 inches, or as indicated on Drawings. Remove vegetation and foreign inorganic material. Place 4 inches of topsoil on loosened material and roll lightly with appropriate lawn roller to consolidate topsoil.

B. Increase depth of topsoil to 6 inches when placed over sand bedding and backfill materials specified in Section 02320 - Utility Backfill Material.

C. For areas to receive shrubs or trees, excavate existing material and place topsoil to depth and dimensions shown on Drawings.

D. Remove spilled topsoil from curbs, gutters, and, paved areas and dispose of excess topsoil in accordance with requirements of Section 01576 - Waste Material Disposal.

E. Place topsoil to promote good drainage and compact with light roller. Water topsoil after placement until saturated for minimum depth 6 inches, fill in and recompact areas of settlement.

### 3.04 PROTECTION

A. Protect topsoil from wind and water erosion until planting is completed.

END OF SECTION

Section 02912

# TREE, PLANT, AND HARDSCAPE PROTECTION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Section includes:

1. Tree root barriers; various depths and combinations may be required.
2. Tree trunk protectors.
3. Water barriers.
4. Staking and guying materials.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for root barrier shall be on a linear foot basis for height noted.
2. Payment for tree trunk protector, water barriers and staking material shall be on a linear foot basis for height noted.
3. Refer to Section 01270-Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). When Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. Standards of the following as referenced:

1. American National Standards Institute (ANSI).
2. American Society for Testing and Materials (ASTM).

### 1.04 DEFINITIONS

A. Terms:

1. Tree root barrier: Mechanical barrier and root deflector to prevent tree roots from damaging hardscapes and landscapes.

2. Tree trunk protector: Material to protect young tree trunks from rodents, string trimmers, and lawn mowers.

3. Water barriers:

   a. Controls run-off, preventing hardscape damage.

   b. Prevents irrigation water from percolating under pavement.

   c. Water corral for planting areas preventing pavement damage and saves water.

   d. Prevents snow, ice, and saltwater run-off from polluting planting areas adjacent to roadways and parking areas.

   e. Liner to separate golf greens and turf.

   f. Bamboo control.

.05 SUBMITTALS

A. Product data: Manufacturers standard literature defining materials for use on this Project.

B. Shop drawings:

   1. Indicate locations and extent for tree root barrier material.

   2. Indicate trees receiving tree trunk protectors.

   3. Indicate locations and extent of water barriers.

   4. Indicate trees and plants to be staked and guyed.

C. Samples; if required by Architect:

   1. Tree root barrier: One full length panel.

   2. Tree trunk protector: One unit.

   3. Water barrier: One lineal foot of material.

   4. Staking and guying: One lineal foot.

D. Quality control submittals; manufacturer's instructions: Complete installation instructions for

each item specified; may be combined with product data.

1.06 QUALITY ASSURANCE

A. Qualifications; manufacturer: Minimum 20 years experience in tree and plant protection and accessories.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping: Provide materials in original unopened containers with manufacturer's labels intact and legible.

B. Acceptance at site:

1. Damaged materials determined by visual inspection will not be accepted.

2. Remove rejected materials from Project site immediately.

C. Storage and protection: Store materials in dry area in manufacturer's protective packaging; in original containers with labels and instruction instructions intact.

PART 2 PRODUCTS

2.01 MATERIALS

A. Acceptable manufacturers:

1. Products of manufacturers meeting indicated standards and specified material properties are acceptable for use, subject to approval of product list and samples.

B. Basic Material Properties of Tree Root Barriers

| Material and Thickness | | Homopolymer Polyethylene |
|---|---|---|
| Properties | ASTM Test Method | Value Homopolymer Polyethylene |
| Tensile Stress Yield | D638 | 3800 |
| Elongation at Break % | D638 | 10% |
| Tensile Modulus | D638 | 155,000 |
| Notched Izod Impact | D256A | 0.4 – 0.4 |
| Flexural Modulus 73 PSI | 0790 | 145,000 |
| Hardness Shore | D2240 | P66 |

2.02 MANUFACTURED UNITS

A. Tree root barriers:
   a) Shall be produced 12" – 48" depth.
   b) Material: 0.080" wall thickness, nominal, injection molded 50% post-consumer recycled polypropylene panels with UV inhibitors.
   c) Panel Specifics:
      1. 7/16" Wide integral molded 0.08" thickness double top edge with stiffening ribs; bottom edge attached to vertical root deflecting ribs.
      2. Integral molded 0.080" thickness by 2" deep vertical root directing ribs spaced at 6.0" O.C.
      3. Integral molded 0.080" thickness by 2" long by 3/8" wide horizontal anti-lift ground lock tabs; minimum three per panel.
   d) Preassembled joiner system for panel connection to adjacent panel.
   e) Refer to standard details for root barrier installation.

B. Tree trunk protectors:

   1. Material: 0.060" thickness polyethylene with UV inhibitors, recyclable.

   2. Size: 9" high by single length accommodating tree up to 4" dia.

   3. Larger trees indicated for protection: Couple two or more sections together.

C. Water barriers:

   1. Product standard of quality: Water Barrier WB Series.

   2. Material: 0.030" 0.040" thickness High Density Polyethylene (HPDE).

   3. Sizes: 24", 30", and 36" wide by 300'-0" rolls.

   4. Manufacturers standard sealing tape.

   5. Sealant: Silicone type recommended by water barrier manufacturer for certain applications; applications requiring sealant indicated in manufacturers product data.

D. Staking and guying materials:

   1. Material: Flat, woven polypropylene; 900 lb. break strength.

   2. Size: wide by manufacturers standard roll lengths.

2.03 ACCESSORIES
A. Provide related materials for complete installation of specified materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions:

1. Verify other work in other sections, in, at, and around landscaping work is complete to extent that no damage will occur to newly planted materials or, any possible construction related damage will be minimal and replacement plant material is readily available for planting at no additional cost.

2. Obtain verification, in writing, from work required in other Sections directly involving work in this Section regarding correct grades have been provided, coordination of topsoil spreading, and lawns and grasses planting.

3. The contractor shall fulfill the responsibilities below prior to beginning work. Failure to do so will require removal or replanting work in this section.

   a. Provide written notification to Architect of unacceptable conditions

   b. Receive verification of written notice

3.02 PREPARATION

A. Surface protection: Use methods necessary to prevent damage to completed site work performed in other Sections. Protect access to and areas around planted materials. Restore damaged areas to original compaction, grades, and lines; repair damaged grassed areas.

3.03 INSTALLATION

A. Tree root barriers: Install in accord with manufacturers reviewed installation instructions where indicated on reviewed shop drawings with vertical root directing ribs facing inwards towards trees or plants; connect panels together as required.

B. Tree trunk protectors:

1. Install in accord with manufacturers reviewed installation instructions where indicated on reviewed shop drawings.
2. Join two or more segments together for trees over 4" dia.

C. Water barriers:
1. Install where indicated on reviewed shop drawings in accord with manufacturers reviewed installation instructions using material widths required for conditions encountered.

2. Seal to hardscape surfaces with specified sealant.

3. Join material lengths with manufacturers sealing tape.

D. Staking and guying materials:

1. Immediately after planting, guy and stake designated trees and large plants.

2. Include tightening of guying materials to bring trees and plants to upright position.

END OF SECTION

Section 02915S

TREE PLANTING

*The following supplement replaces Section 02915 Tree Planting in its entirety.*

**PART 1 GENERAL**

1.01 DESCRIPTION OF WORK

A. This section specifies the requirements and standards for planting trees using a mechanical tree spade and container grown trees.

1.02 MEASUREMENT AND PAYMENT

A. Unit Price per Tree.

1. Payment for tree planting is on unit price basis for each tree planted and shall include cost of watering during maintenance period for trees not served by irrigation system.

1.03 REFERENCES

A. ANSI Z 60.1 - Nursery Stock.

1.04 SUBMITTALS

A. Submittals shall conform to requirements of Section 01330-Submittal Procedures.

B. Submit physical address for location of trees. Trees shall be tagged in field for transplanted trees, and at the nursery for container trees, for inspection by City Engineer or City Forester. Tag shall be securely attached to branch, shall be waterproof, and shall legibly bear designation of botanical and common name. Submit right of entry agreement for City Engineer or City Forester to access tree farm or nursery in order to inspect trees.

C. Submit following documentation for Compost to be utilized:

1. Feedstock by percentage in the final compost.
2. Documentation that the compost meets federal and state health and safety regulations.
3. Documentation that the composting process has met time and temperature requirements.
4. Copy of producer's STA certification.
5. Copy of the current TCEQ compliance statement signed by facility manager for any biosolids compost utilized.

1.05 QUALITY ASSURANCE

A. Transplanted trees shall be planted by a contractor specializing in tree spade planted trees. The contractor shall have a minimum of 8 years experience in planting trees with truck mounted tree spades. The contractor shall have immediate access to required trees in a tree farm/field located within 40 miles of project site. Container trees shall be planted by Landscaping firm with a minimum of 3 years experience in planting container grown trees.

B. Substitutions of specified tree species and sizes, and tree spade and container size shall not be made without written approval from City Engineer. When specified planting material is not obtainable, submit proof on non-availability together with proposal for use of equivalent material. Substitutions of larger size than specified will be allowed, provided it meets requirements of article 2.01 of this section, but shall be provided at no additional costs to owner.

1.06 WARRANTY

A. Contractor shall warrant trees against defects including death, unsatisfactory growth, or loss of shape due to improper pruning, maintenance, or lack of moisture, for 1 year after completion of planting. Contractor shall plumb leaning trees during warranty period.

B. Remove and replace trees found to be dead during warranty period. Remove and replace trees which have more than 40% twig and/or foliage dieback or are in doubtful condition at the end of warranty period, or if approved by City Engineer, extend warranty period for such trees for a full growing season. Any trees that are required to be replaced under warranty shall be replaced at no additional cost to owner.

PART 2 PRODUCTS AND MATERIALS

2.01 TREES

A. Provide trees which are straight and symmetrical and have a persistently preferred main leader. Co-dominant or dual leaders will not be allowed or accepted. Trees with a significant number of v-crotches, or trees with major branches that have v-crotches will not be allowed or accepted. The crown shall be in good overall proportion to the entire height of the tree. The minimum crown spread and height shall conform to the following standards for each tree:

1. Transplant Trees:
   1. 3" diameter tree shall have a minimum canopy spread of 50" diameter, total tree height of 8 feet, and canopy height of 5 feet.
   2. 4" diameter tree shall have a minimum canopy spread of 70" diameter, overall tree height of 10 feet, and a canopy height of 6.5 feet.
   3. 5" diameter tree shall have a minimum canopy spread of 90" diameter, overall tree height of 12 feet, and a canopy height of 8 feet.
   4. 7" diameter tree shall have a minimum canopy spread of 110" diameter, overall tree height of 15 feet, and a canopy height of 10 feet.
2. Container Trees:
   1. Tree diameter, overall tree height, and canopy height shall conform to the ANSI Z 60.1 (most current publication)

B. Tree diameter and/or container/spade size shall be as specified on the drawings. Tree diameter to be measured 6 inches above natural grade or planting media for each tree.

C. Trees shall be healthy, vigorous, and in overall good condition. Trees shall be free of disease, insects, eggs, larvae; and free of defects such as wasp galls, knots, trunk wounds or scars, abrasions, or disfigurement.

D. Foliage shall be dark green, as dark as is typical for the given species. The tree foliage shall not be chlorotic, necrotic, or dying back.

2.02 SOIL CONDITIONER OR ROOT STIMULATOR

A. Root stimulator shall contain at a minimum the following ingredients: Ectomycorrhizal Fungi, VA Mycorrhizal (VAM) Fungi, *Rhizosphere Bacillus spp.*, Kelp Meal, Humic Acid, and Soluble Yucca.

2.03 SAND BACKFILL

A. Sand backfill shall be a fine sandy loam, typical of the soil at the project site, or fine bank sand. The back fill shall be free of noxious weeds, grasses, sticks, roots or stones and shall be consistent in texture.

2.04 COMPOST

A. Compost shall have been produced by aerobic (biological) decomposition of organic matter. Compost feedstock may include, but is not limited to, leaves and yard trimmings, biosolids, food scraps, food-processing

residuals, manure or other agricultural residuals, forest residues, bark, and paper. Compost and wood chips shall not contain any visible refuse, other physical contaminants, or any substance considered harmful to plant growth. Compost shall not contain materials that have been treated with chemical preservatives as a compost feedstock or as a wood chip. Compost shall not contain mixed municipal solid waste compost. Compost shall meet all applicable 40 CFR 503 standards for Class A biosolids and TCEQ health and safety regulations as defined in the TAC, Chapter 332, including the time and temperature standards in Subchapter B, Part 23. Meet the requirements of the United States Composting Council (USCC) Seal of Testing Assurance (STA) program.

2.05 MULCH

A. Mulch shall be shredded hardwood, free of noxious weed seeds.

2.06 WATER

A. Water shall be potable from municipal water supplies.

2.07 SOURCE QUALITY CONTROL

A. Notify City Engineer, prior to delivery and planting, with location where trees that have been tagged for planting may be inspected. Trees will be inspected for compliance with this specification.

**PART 3 EXECUTION**

3.01 EQUIPMENT (Applies to Transplant Trees)

A. Tree spade shall be in good condition with minimum tolerances between digging blades. All blades shall be true to their designed spade and free of bends and deformities. The tree spade shall be mounted on suitable, stable machines capable of supporting the weight of all dug materials and heavy enough to force all blades into the soil to full depth. Holes to receive machine transplanted trees shall be dug with machines of like size and manufacture to that which is used to dig the intended tree.

B. Trees shall be transplanted with minimum tree spade sizes for maximum tree diameter per the following standards:

- Maximum tree diameter for 50" tree spade shall be 3"
- Maximum tree diameter for 60" tree spade shall be 4"
- Maximum tree diameter for 80" tree spade shall be 5"
- Maximum tree diameter for 90" tree spade shall be 7"
- Maximum tree diameter for 120" tree spade shall be 9"

3.02 PREPARATION FOR PLANTING

A. Schedule work so that planting can proceed as rapidly as the planting site becomes available. Plant trees after final grades are established and prior to planting of turf, unless otherwise approved by City Engineer in writing. If planting of trees occurs after seeding work, protect turf areas and promptly repair damage to turf resulting from tree planting operations.

B. Layout individual trees at locations shown on Drawings. In case of conflicts, notify City Engineer before proceeding with work. Trees shall be laid out and approved by City Engineer and City Forester prior to planting.

C. The contractor shall be responsible for locating and confirming underground utilities.

D. Trees shall be pruned, at the tree farm, to remove dead, diseased, dying, or broken branches that will be detrimental to the future shape or structure of the tree. Old pruning stubs should also be removed. All pruning cuts should be made sufficiently close to the branch collar, so as not to leave a protruding stub, with out cutting into the branch collar. Each cut shall be made with the appropriately sized pruning shear, which should have properly matched, sharpened blades. Pruning cuts shall not be painted or otherwise treated.

E. Trees are subject to inspection at the tree farm or location of collection. When directed, provide and use serialized locking tags on trees.

F. Contractor shall notify City Engineer and City Forester at least 48 hours before delivering trees to worksite. Coordinate with City for inspection and approval of materials upon delivery. Remove rejected trees from the worksite and replace as directed.

G. Container grown trees shall be thoroughly watered prior to leaving tree farm or nursery.

3.03 COLLECTING, TRANSPORTING AND PLANTING

Transplant Trees

A. Tree shall be centered in tree spade at digging.

B. No damage to branches or trunk shall be allowed while backing onto tree at tree farm, digging tree, or pulling away from tree after planting. Damage to tree trunk caused by the digging or planting of the tree, will be grounds for non-acceptance of tree under this specification.

C. Roots protruding from the digging blades shall be pruned flush with the root ball prior to planting.

D. Contractor shall ensure tree is tied down so that the total height of the tree spade and tree do not exceed legal height limits.

E. Tree shall be covered with an open-weave fabric tarp to minimize wind damage and desiccation of leaves during transportation from collection site to planting site.

F. Each tree shall be planted in its final planting site within 4 hours of being dug from the collection site.

G. Tree shall be planted plumb and the root ball shall be set 2-3 inches above the finished grade.

H. No staking or guying of the tree should be installed.

I. Voids between existing grade and tree root ball shall be backfilled with sand backfill. The sand backfill should be thoroughly watered into the voids, so that no air pockets remain.

J. A water holding basin shall be constructed around each tree. The basin should be constructed with the sand backfill and shall be constructed directly over the void between the existing grade and root ball, 6-8" in height, and 8-10" in width. The top of the root ball shall not be covered with sand backfill or any other type of soil.

K. Prior to mulching, each tree shall be thoroughly watered 2 separate times. Each time the watering basin should be filled with water and the water allowed to soak the tree and force sand backfill into all voids. After the second watering the basin should be rebuilt to its original shape.

L. Each tree shall be thoroughly soaked with root stimulator, per label instructions.

M. Mulching shall be completed within 24 hours of planting. A 4" deep layer of mulch shall be applied to the entire water holding basin and top of root ball. No mulch shall be applied directly against the trunk of the tree.

N. Control dust caused by planting operations. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

Container Trees

A. Excavate planting pit to a depth equal to planting media height in container, or 1-2" shallower. Do not over excavate, to ensure planted root

ball rest on undisturbed sound soil. Planting pit shall have a diameter that is at least 2 feet wider than diameter of root ball.

B. When conditions detrimental to plant growth are encountered, such as unsatisfactory soil, obstructions, or adverse drainage conditions, notify City Engineer and/or City Forester.

C. Edges of planting pit shall be scarified with gouges a minimum of 1" deep and 1" wide spaced no wider than 8" on center.

D. Trees shall be planted within 24 hours of excavating planting pits to minimize soil desiccation.

E. Trees shall be handled by container during transportation and planting. Trees shall not be handled by grasping trunk only.

F. Trees shall be covered with open weave tarp in transportation from nursery to planting site, to minimize tree and leaf desiccation.

G. Deliver trees after preparations for planting have been completed and plant immediately. If planting does not occur within 6 hours of delivery, set trees in shade, protect from weather and mechanical damage, and keep root balls moist by covering with mulch, compost, burlap, or other acceptable means of retaining moisture. Water trees as needed to avoid root ball desiccation.

H. Each tree shall be removed from container without cracking or disturbing root ball. The circumference of the root ball shall be scored with sharp utility knife ½" deep, from top to bottom of ball, at 8" intervals to cut any circling roots.

I. Set root ball in planting pit, on undisturbed soil, in center of pit and plumb plant. Top of root ball shall be at same elevation of finished grade or 1-2" above finished grade.

J. Backfill planting pit around root ball in lifts, each lift shall be 1/3 the depth of the root ball. Pit shall be thoroughly watered after each lift to remove air pockets. Backfill shall consist of the following materials:

1. Soil excavated from planting pit: 75 percent
2. Compost: 15 percent
3. Peat moss: 10 percent

K. Construct a plant basin at least 6 inches deep with an inside diameter equal to the planting pit diameter and with a level top around the plant unless

otherwise indicated on plans. Use excavated soil from the planting pit, amended backfill material, or approved material for the basin.

O. Mulching shall be completed within 24 hours of planting. A 4" deep layer of mulch shall be applied to the entire water holding basin and top of root ball. No mulch shall be applied directly against the trunk of the tree.

P. Each tree shall be guyed and staked immediately after planting. Each tree shall have a minimum of 2 post; more may be required depending on soil structure. Provide adequate number of post to ensure tree stability during establishment. Tree shall be secured by plastic tree chain, do not use wire with plastic or rubber guards.

Q. Control dust caused by planting operations. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

3.04 FIELD QUALITY CONTROL

A. City Engineer may reject unsatisfactory or defective material at anytime during progress of work. Contractor shall remove rejected trees immediately from site and replace with specified materials. Plant material not installed in accordance with these specifications will be rejected.

B. An inspection to determine final acceptance will be conducted by City Engineer and City Forester at the end of the 12 month maintenance period. Additional inspections will be conducted for extended warranty periods provided for in paragraph 1.06B.

3.05 MAINTENANCE PERIOD

A. Contractor shall maintain trees during planting operations and for a period of 12 months after completion of construction (substantial completion).

B. Contractor shall water trees during maintenance period to ensure tree establishment. Trees served with bubblers or drip irrigation will not require manual watering.

C. Contractor shall apply a minimum of 25 gallons of water to each tree weekly, or more if required to maintain healthy vigorous growth. No watering shall be required during weeks when the planting site receives at least 1" of rainfall. Rainfall to be measured at planting site.

3.06 CLEANUP AND PROTECTION

A. During planting work, keep pavements clean and work area in an orderly condition.

B. No open planting holes shall be left at planting site without immediate supervision by planting personnel. Use plywood, or other suitable material, to cover open hole when not under immediate supervision.

C. Protect planting work and material from damage due to planting operations. Maintain protection during installation and maintenance period. Treat, repair, or replace damaged planting work as directed by City Engineer.

D. Dispose of excess soil and waste in accordance with requirements of Section 01576- Waste Material Disposal. On-site burning of combustible materials will not be permitted.

END OF SECTION

Victor Cordova, City Forester
PARD, Urban Forestry, City of Houston

11 27 07
Date

Section 02915

# TREE PLANTING

## PART 1 GENERAL

### 1.01 DESCRIPTION OF WORK

A. This section specifies the requirements and standards for planting trees using a mechanical tree spade and container grown trees.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Price per tree.

1. Payment for tree planting is on unit price basis for each tree planted and shall include cost of watering during maintenance period for trees not served by irrigation system.

2. When shown on Drawings or directed by Project Manager to remove and relocate tree affected by trench zone, work shall be paid for under one of the following bid items.

   a. Bid item "Remove and Relocate Tree" includes moving tree with truck mounted tree spade and replanting same tree in new location. Payment is for each tree removed and relocated.

   b. Bid item "Remove, Temporary Store and Replant Tree" includes moving tree with truck mounted tree spade and replanting tree at temporary location, (determined by Contractor) maintaining tree until construction is complete and replanting same tree back to its original location. Payment is for each tree removed, stored and replanted.

3. Refer to Section 01270 – Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ANSI Z 60.1 - Nursery Stock.

### 1.04 SUBMITTALS

A. Submittals shall conform to requirements of Section 01330-Submittal Procedures.

B. Submit physical address for location of trees. Trees shall be tagged in field for transplanted trees, and at the nursery for container trees, for inspection by City Engineer or City Forester. Tag shall be securely attached to branch, shall be waterproof, and shall legibly bear designation of botanical and common name. Submit right of entry agreement for City Engineer or City Forester to access tree farm or nursery in order to inspect trees.

C. Submit following documentation for Compost to be utilized:

1. Feedstock by percentage in the final compost.

2. Documentation that the compost meets federal and state health and safety regulations.

3. Documentation that the composting process has met time and temperature requirements.

4. Copy of producer's STA certification.

5. Copy of the current TCEQ compliance statement signed by facility manager for any biosolids compost utilized.

1.05 QUALITY ASSURANCE

A. Transplanted trees shall be planted by a contractor specializing in tree spade planted trees. The contractor shall have a minimum of 8 years experience in planting trees with truck mounted tree spades. The contractor shall have immediate access to required trees in a tree farm/field located within 40 miles of project site. Container trees shall be planted by Landscaping firm with a minimum of 3 years experience in planting container grown trees.

B. Substitutions of specified tree species and sizes, and tree spade and container size shall not be made without written approval from City Engineer. When specified planting material is not obtainable, submit proof on non-availability together with proposal for use of equivalent material. Substitutions of larger size than specified will be allowed, provided it meets requirements article 2.01 of this section, but shall be provided at no additional cost to owner.

1.06 WARRANTY

A. Contractor shall warrant trees against defects including death, unsatisfactory growth, or loss of shape due to improper pruning, maintenance, or lack of moisture, for 2 year after completion of construction (substantial completion). Contractor shall plumb leaning trees during warranty period.

B. Remove and replace trees found to be dead during warranty period. Remove and replace trees which have more than 40% twig and/or foliage dieback or are in doubtful condition at the end of warranty period, or if approved by City Engineer, extend warranty period for such trees for a full growing season. Any trees that are required to be replaced under warranty shall be replaced at no addition cost to owner.

## PART 2 PRODUCTS AND MATERIALS

### 2.01 TREES

A. Provide trees which are straight and symmetrical and have persistently preferred main leader. Co-dominant or dual leaders will not be allowed or accepted. Trees with a significant number of v-crotches, or trees with major branches that have v-crotches will not be allowed or accepted. The crown shall be in good overall proportion to the entire height of the tree. The minimum crown spread and height shall conform to the following standards for each tree:

1. Transplant Trees:

    1. 3" diameter tree shall have a minimum canopy spread of 50" diameter, total tree height of 8 feet, and canopy height of 5 feet.

    2. 4" diameter tree shall have a minimum canopy spread of 70" diameter, overall tree height of 10 feet, and a canopy height of 6.5 feet.

    3. 5" diameter tree shall have a minimum canopy spread of 90" diameter, overall tree height of 12 feet, and a canopy height of 8 feet.

    4. 7" diameter tree shall have a minimum canopy spread of 110" diameter, overall tree height of 15 feet, and a canopy height of 10 feet.

2. Container Trees:

    1. Tree diameter, overall tree height, and canopy height shall conform to ANSI Z 60.1 (most current publication).

B. Tree diameter and/or container/spade size shall be as specified on the drawings. Tree diameter to be measured 6 inches above natural grade or planting media for each tree.

C. Trees shall be healthy, vigorous, and in overall good condition. Trees shall be free of disease, insects, eggs, larvae; and free of defects such as wasp galls, knots, trunk wounds or scars, abrasions or disfigurement.

D. Foliage shall be dark green, as dark as is typical for the given species. The tree foliage shall not be chlorotic, necrotic, or dying back.

2.02 SOIL CONDITIONER OR ROOT STIMULATOR

A. Root stimulator shall contain at a minimum the following ingredients: Ectomycorrhizal Fungi, VA Mycorrhizal(VAM) Fungi, Rhizosphere Bacillus spp., Kelp Meal, Humic Acid, and Soluble Yucca.

2.03 SAND BACKFILL

A. Sand backfill shall be a fine sandy loam, typical of the soil at the project site, or fine bank sand. The back fill shall be free of noxious weeds, grasses, sticks, roots or stone and shall be consistent in texture.

2.04 COMPOST

A. Compost shall have been produced by aerobic (biological) decomposition of organic matter. Compost feedstock may include, but is not limited to, leaves and yard trimmings, biosolids, food scraps, food-processing residuals, manure or other agricultural residuals, forest residues, bark, and paper. Compost and wood chips shall not contain any visible refuse, other physical contaminants, or any substance considered harmful to plant growth. Compost shall not contain materials that have been treated with chemical preservatives as a compost feedstock or as a wood chip. Compost shall not contain mixed municipal solid waste compost. Compost shall meet all applicable 40 CFR 503 standards for Class A biosolids and TCEQ health and safety regulations as defined in the TAC, Chapter 332, including the time and temperature standards in Subchapter B, Part 23. Meet the requirements of the United States Composting Council (USCC) Seal of Testing Assurance (STA) program.

2.05 MULCH

A. Mulch shall be shredded hardwood, free of noxious weed seeds.

2.06 WATER

A. Water shall be potable from municipal water supplies.

2.07 SOURCE QUALITY CONTROL

A. Notify City Engineer, prior to delivery and planting, with location where trees that have been tagged for planting may be inspected. Trees will be inspected for compliance with this specification.

## PART 3 EXECUTION

### 3.01 EQUIPMENT (Applies to Transplant Trees)

A. Tree spade shall be in good condition with minimum tolerances between digging blades. All blades shall be true to their designed spade free of bends and deformities. The tree spade shall be mounted on suitable, stable machines capable of supporting the weight of all dug materials and heavy enough to force all blades into the soil to full depth. Holes to receive machine transplanted trees shall be dug with machines of like size and manufacture to that which is used to dig the intended tree.

B. Trees shall be transplanted with minimum tree spade sizes for maximum tree diameter per the following standards:

1. Maximum tree diameter for 50" tree spade shall be 3"
2. Maximum tree diameter for 60" tree spade shall be 4"
3. Maximum tree diameter for 80" tree spade shall be 5"
4. Maximum tree diameter for 90" tree spade shall be 7"
5. Maximum tree diameter for 120" tree spade shall be 9"

### 3.02 PREPARATION FOR PLANTING

A. Schedule work so that planting can proceed as rapidly as the planting site becomes available. Plant trees after final grades are established and prior to planting of turf, unless otherwise approved by City Engineer in writing. If planting of trees occurs after seeding work, protect turf areas and promptly repair damage to turf resulting from tree planting operations.

B. Layout individual trees at locations shown on Drawings. In case of conflicts, notify City Engineer before proceeding with work. Trees shall be laid out and approved by City Engineer and City Forester prior to planting.

C. The contractor shall be responsible for locating and confirming underground utilities.

D. Trees shall be pruned, at the farm, to remove dead, diseased, dying, or broken branches that will be detrimental to the future shape or structure of the tree. Old pruning stubs should also be removed. All pruning cuts should be made sufficiently close to the branch collar, so as not to leave a protruding stub, without cutting into the branch collar. Each cut shall be made with the appropriately sized pruning shear, which should have properly matched, sharpened blades. Pruning cuts shall not be painted or otherwise treated.

E. Trees are subject to inspection at the tree farm or location of collection. When directed, provide and use serialized locking tags on trees.

F. Contractor shall notify City Engineer and City Forester at least 48 hours before delivering trees to worksite. Coordinate with City for inspection and approval of materials upon delivery. Remove rejected trees from the worksite and replace as directed.

G. Container grown trees shall be thoroughly watered prior to leaving tree farm or nursery.

3.03 COLLECTING, TRANSPORTING AND PLANTING

Transplant Trees

A. Tree shall be centered in tree spade at digging.

B. No damage to branches or trunk shall be allowed while backing onto tree at tree farm, digging tree, or pulling away from tree after planting. Damage to tree trunk caused by the digging or planting of the tree, will be grounds for non-acceptance of tree under this specification.

C. Roots protruding from the digging blades shall be pruned flush with the root ball prior to planting.

D. Contractor shall ensure tree is tied down so that the total height of the tree spade and tree do not exceed legal height limits.

E. Tree shall be covered with an open-weave fabric tarp to minimize wind damage and desiccation of leaves during transportation from collection site to planting site.

F. Each tree shall be planted in its final planting site within 4 hours of being dug from the collection site.

G. Tree shall be planted plumb and the root ball shall be set 2-3 inches above the finished grade.

H. No staking or guying of the tree should be installed.

I. Voids between existing grade and tree root ball shall be backfilled with sand backfill. The sand backfill should be thoroughly watered into the voids, so that no air packets remain.

J. A water holding basin shall be constructed around each tree. The basin should be constructed with the sand backfill and shall be constructed directly over the void between

the existing grade and root ball, 6-8" in height, and 8-10" in width. The top of the root ball shall not be covered with sand backfilled or any other type of soil.

K. Prior to mulching, each tree shall be thoroughly watered 2 separate times. Each time the watering basin should be filled with water and the water allowed to soak the tree and force sand backfill into all voids. After the second watering basin should be rebuilt to its original shape.

L. Each tree shall be thoroughly soaked with root stimulator, per label instructions.

M. Mulching shall be completed within 24 hours of planting. A 4" deep layer of mulch shall be applied to the entire water holding basin and top of root ball. No much shall be applied directly against the trunk of the tree.

N. Control dust caused by planting operations. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

Container Trees

A. Excavate planting pit to a depth equal to planting media height in container, or 1-2" shallower. Do not over excavate, to ensure planted root ball rest on undisturbed sound soil. Planting pit shall have a diameter that is at least 2 feet wider than diameter of root ball.

B. When conditions detrimental to plant growth are encountered, such as unsatisfactory soil, obstructions, or adverse drainage conditions, notify City Engineer and/or City Forester.

C. Edges of planting pit shall be scarified with gouges a minimum of 1" deep and 1" wide spaced no wider than 8" on center.

D. Trees shall be planted within 24 hours of excavating planting pits to minimize soil desiccation.

E. Trees shall be handled by container during transportation and planting. Trees shall not be handled by grasping trunk only.

F. Trees shall be covered with open weave tarp in transportation from nursery to planting site, to minimize tree and leaf desiccation.

G. Deliver trees after preparations for planting have been completed and plant immediately. If planting does not occur within 6 hours of delivery, set trees in shade, protest from weather and mechanical damage, and keep root balls moist by covering with mulch, compost, burlap, or other acceptable means of retaining moisture. Water trees as needed to avoid root ball desiccation.

H. Each tree shall be removed from container without cracking or disturbing root ball. The circumference of the root ball shall be scored with sharp utility knife ½" deep, from top to bottom of ball, at 8" intervals to cut any circling roots.

I. Set root ball in planting pit, on undisturbed soil, in center of pit and plumb plant. Top of root ball shall be at same elevation of finished grade or 1-2" above finished grade.

J. Backfill planting pit around root ball in lifts, each lift shall be 1/3 the depth of the root ball. Pit shall be thoroughly watered after each lift to remove air pockets. Backfill shall consist of the following materials:

1. Soil excavated from planting pit: 75 percent

2. Compost: 15 percent

3. Peat moss: 10 percent

K. Construct a plant basin at least 6 inches deep with an inside diameter equal to the planting pit diameter and with a level top around the plant unless otherwise indicated on plans. Use excavated soil from the planting pit, amended backfill material, or approved material for the basin.

O. Mulching shall be completed within 24 hours of planting. A 4" deep layer of mulch shall be applied to entire water holding basin and top of root ball. No mulch shall be applied directly against the trunk of the tree.

P. Each tree shall be guyed and staked immediately after planting. Each tree shall have a minimum of 2 post; more may be required depending on soil structure. Provide adequate number of post to ensure tree stability during establishment. Tree shall be secured by plastic tree chain, do not use wire with plastic or rubber guards.

Q. Control dust caused by planting operations. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

3.04 FIELD QUALITY CONTROL

A. City Engineer may reject unsatisfactory or defective material at anytime during progress of work. Contractor shall remove rejected trees immediately from site and replace with specified materials. Plant material not installed in accordance with these specifications will be rejected.

B. An inspection to determine final acceptance will be conducted by City Engineer and City Forester at the end of the 24 month maintenance period. Additional inspections will be conducted for extended warranty periods provided for in paragraph 1.06B.

3.05 MAINTENANCE PERIOD

A. Contractor shall maintain trees during planting operations and for a period of 24 months after completion of construction (substantial completion).

B. Contractor shall water trees during maintenance period to ensure tree establishment. Trees served with bubblers or drip irrigation will not require manual watering.

C. Contractor shall apply a minimum of 25 gallons of water to each tree weekly, or more if required to maintain healthy vigorous growth. No watering shall be required during weeks when the planting site receives at least 1" of rainfall. Rainfall to be measured at planting site.

3.06 CLEANUP AND PROTECTION

A. During planting work, keep pavement clean and work area in an orderly condition.

B. No open planting holes shall be left at planting site without immediate supervision by planting personnel. Use plywood, or other suitable material, to cover open hole when not under immediate supervision.

C. Protest planting work and material from damage due to planting operations. Maintain protection during installation and maintenance period. Treat, repair, or replace damaged planting work as directed by City Engineer.

D. Dispose of excess soil and waste in accordance with requirements of Section 01576-Waste Material Disposal. On-site burning of combustible materials will not be permitted.

END OF SECTION

Section 02921

# HYDRO MULCH SEEDING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Seeding, fertilizing, mulching, and maintenance of areas indicated on Drawings.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for hydro mulch seeding is on an acre basis, within limits of construction if shown on the drawings.

2. No payment will be made for hydro mulch seeding under this Section if limits of constructions are not shown on the drawings. Include payment in Section 01740 – Site Restoration.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit certification from supplier that each type of seed conforms to these specifications and requirements of Texas Seed Law. Certification shall accompany seed delivery.

C. Submit certificate stating that fertilizer complies with these specifications and requirements of Texas Fertilizer Law.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Topsoil: Conform to material requirements of Section 02911 - Topsoil.

B. Seed: Conform to U.S. Department of Agriculture rules and regulations of Federal Seed Act and Texas Seed Law. Seed shall be certified 90 percent pure and furnish 80 percent germination and meet following requirements:

1. Rye: Fresh, clean, Italian rye grass seed (lollium multi-florum), mixed in labeled proportions. As tested, minimum percentages of impurities and germination must be labeled. Deliver in original unopened containers.

2. Bermuda: Extra-fancy, treated, lawn type common bermuda (Cynodon dactylon). Deliver in original, unopened container showing weight, analysis, name of vendor, and germination test results.

3. Wet, moldy, or otherwise damaged seed will not be accepted.

4. Seed requirements, application rates, and planting dates are:

| TYPE | APPLICATION RATE POUNDS/A | PLANTING DATE |
|---|---|---|
| Hulled Common Bermuda Grass 98/88<br>Unhulled Common Bermuda Grass 98/88 | 40<br>40 | Jan 1 to Mar 31 |
| Hulled Common Bermuda Grass 98/88 | 40 | Apr 1 to Sep 30 |
| Hulled Common Bermuda Grass 98/88<br>Unhulled Common Bermuda Grass 98/88<br>Annual Rye Grass (Gulf) | 40<br>40<br>30 | Oct 1 to Dec 31 |

C. Fertilizer: Dry and free flowing, inorganic, water soluble commercial fertilizer, which is uniform in composition. Deliver in unopened containers which bear manufacturers guaranteed analysis. Caked, damaged, or otherwise unsuitable fertilizer will not be accepted. Fertilizer shall contain minimum percentages of following elements:

1. Nitrogen: 10 Percent

2. Phosphoric Acid: 20 Percent

3. Potash: 10 Percent

D. Mulch:

1. Virgin wood cellulose fibers from whole wood chips having minimum of 20 percent fibers 0.42 inches in length and 0.01 inches in diameter.

2. Cellulose fibers manufactured from recycled newspaper and meeting same fiber content and size as for cellulose fibers from wood chips.

3. Dye mulch green for coverage verification purposes.

E. Soil Stabilizer: "Terra Tack 1" or approved equal.

F. Weed control agent: Pre-emergent herbicide for grass areas, such as "Benefin," or approved equal.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Place and compact topsoil in accordance with requirements of Section 02911 - Topsoil.

B. Dispose of Objectionable and Waste Materials in accordance with Section 01576 - Waste Material Disposal.

### 3.02 APPLICATION

A. Seed: Apply uniformly at rates given in Paragraph 2.01 B for type of seed and planting date.

B. Fertilizer: Apply uniformly at rate of 500 pounds per acre.

C. Mulch: Apply uniformly at rate of 50 pounds per 1000 square feet.

D. Soil Stabilizer: Apply uniformly at rate of 40 pounds per acre.

E. Weed Control Agent: Apply at manufacturer's recommended rate prior to hydro mulching.

F. Sod: Lay single row of sod along perimeter where top soil and pavement intersect. Apply in conformance to Section 02922 - Sodding.

G. Suspend operations under conditions of drought, excessive moisture, high winds, or extreme or prolonged cold. Obtain Project Manager approval before resuming operations.

### 3.03 MAINTENANCE

A. Maintain grassed areas minimum of 90 days, or as required to establish an acceptable lawn. For areas seeded in fall, continue maintenance following spring until acceptable lawn is established.

B. Maintain grassed areas by watering, fertilizing, weeding, and trimming.

C. Repair areas damaged by erosion by regrading, rolling and replanting.

D. Reseed small, sparse grass areas. When sparse areas exceed 20 percent of planted area, reseed by hydro mulch.

E. Mow grass when height reaches 3 1/2 inches or greater on average before final acceptance. Mow to height of 2 1/2 inches.

END OF SECTION

Section 02922

# SODDING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Restoration of existing lawn areas disturbed by construction shall be by installation of new sod.

B. Planting of sod within areas designated on Drawings for purpose of surface stabilization, channel stabilization or vegetation buffer strips.

C. Sod is defined as blocks, squares, strips of turfgrass, and adhering soil used for vegetative planting. To be placed edge to edge for complete coverage.

D. Lawn is defined as ground covered with fine textured grass kept neatly mowed.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for sodding is on square yard basis.

2. For utility construction, no separate payment will be made for sodding. Include payment in section 01740 under site restoration.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

### 1.04 QUALITY ASSURANCE

A. Sod only when weather and soil conditions are deemed by Project Manager to be suitable for proper placement.

B Water and fertilize new sod.

C. Guarantee sod to be growing 30 days after substantial completion.

D. Maintenance Period:

1. Begin maintenance immediately after each section of grass sod is installed and continue for 30 day period from date of substantial completion.

2. Resod unacceptable areas.

3. Water, fertilize, control disease and insect pests, mow, edge, replace unacceptable materials, and perform other procedures consistent with good horticultural practice to ensure normal, vigorous and healthy growth. Install disease control within guidelines set forth by Structural Pest Control Board of the State of Texas.

E. Notify Project Manager 10 days before end of maintenance period for inspection.

## PART 2 PRODUCTS

### 2.01 SOD

A. Species: Bermuda (Cynodon Dactylon), Buffalo (Buchloe Dactyloides), or St. Augustine (Stenotaphrum Secundatum) Gulf Coast variety to match existing sod.

B. Contents: 95 percent permanent grass suitable to climate in which it is to be placed; not more than 5 percent weeds and undesirable grasses; good texture, free from obnoxious grasses, roots, stones and foreign materials.

C. Size: 12 inch wide strips, uniformly 2 inches thick with clean-cut edges.

D. Sod is to be supplied and maintained in healthy condition as evidenced by grass being normal green color.

### 2.02 FERTILIZER

A. Available nutrient percentage by weight: 12 percent nitrogen, 4 percent phosphoric acid, and 8 percent potash; or 15 percent nitrogen, 5 percent phosphoric acid, and 10 percent potash.

### 2.03 WEED AND INSECT TREATMENT

A. Provide acceptable treatment to protect sod from weed and insect infestation. Submit treatment method to Project Manager for approval. Install insect and disease control within guidelines set forth by Structural Pest Control Board of the State of Texas.

2.04 WATER

A. Potable, available on-site through Contractor's water trucks. Contractor may use City of Houston hydrants when water use is measured through Contractor's meter. Do not use private resident's water.

2.05 BANK SAND

A. Free of clay lumps, roots, grass, salt or other foreign material.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that soil placement and compaction have been satisfactorily completed. Verify that soil is within allowable range of moisture content.

B. Top soil shall be free of weeds and foreign material immediately before sodding.

C. Do not start work until conditions are satisfactory. Do not start work during inclement or impending inclement weather.

D. Rake areas to be sodded smooth, free from unsightly variations, bumps, ridges or depressions.

E. Spread 2 inch layer of bank sand over areas to be sodded prior to planting of sod.

F. Apply fertilizer at rate of 25 pounds per 1000 square feet. Apply after raking soil surface and not more than 48 hours prior to laying sod. Mix thoroughly into upper 2 inches of soil. Lightly water to aid in dissipation of fertilizer.

3.02 APPLICATION

A. Full Sodding: Lay sod with closely fitted joints leaving no voids and with ends of sod strips staggered. Lay sod within 24 hours of harvesting.

B. On slopes 2:1 and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.

C. Prior to placing sod, on slopes 3:1 or where indicated, place Hold/Gro or Roll Lite or equal over topsoil. Securely anchor in place with posts sunk firmly into ground at maximum 16 feet on center along pitch of slope and equal to width of wire mesh horizontally across slopes.

D. After sod is laid, irrigate thoroughly to secure 6-inch minimum penetration into soil below sod.

E. Tamp and roll sod with approved equipment to eliminate minor irregularities and to form close contact with soil bed immediately after planting and watering. Submit type of tamping and rolling equipment to be used to Project Manager for approval, prior to construction.

3.03 MAINTENANCE

A. Watering:

1. Water lawn areas once a day with minimum 1/2 inch water for first 3 weeks after area is sodded.

2. After 3 week period, water twice a week with 3/4 inch of water each time unless comparable amount has been provided by rain.

3. Make weekly inspections to determine moisture content of soil unless soil is in frozen condition.

4. Water in afternoon or at night to enable soil to absorb maximum amount of water with minimum evaporation.

B. Mowing:

1. Mow sod at intervals which will keep grass height from exceeding 3 1/2 inches.

2. Set mower blades at 2 1/2 inches.

3. Do not remove more than one-half of grass leaf surface.

4. Mow sodded areas requiring mowing within 1 month after installation with light-weight rotary type mower. Mow sod only when dry and not in saturated or soft condition.

5. Remove grass clippings during or immediately after mowing.

C. Fertilizer and Pest Control:

1. Evenly spread fertilizer composite at rate of 40 pounds per 5000 square feet or as recommended by manufacturer. Do not place fertilizer until 2 weeks after placement of sod.

2. Restore bare or thin areas by topdressing with mix of 50 percent sharp sand and 50 percent sphagnum peat moss.

3. Apply mixture 1/4 to 1/2 inch thick.

4. Treat areas of heavy weed and insect infestation as recommended by treatment manufacturer.

D. Restrict all traffic from sodded areas until sod is established or for minimum 10 days during growing season. Use wood lath and plastic tape to cordon sodded areas. Maintain tape and lath throughout for minimum 30 days during growing season.

3.04 CLEANUP

A. During course of planting, remove excess and waste materials; keep lawn areas clean and take precautions to avoid damage to existing structures, plants, grass, and streets.

B. Remove barriers, signs, and other Contractor material and equipment from project site at termination of establishment period.

C. Dispose of unused materials and rubbish in accordance with Section 01576 - Waste Material Disposal.

END OF SECTION

Section 02951

# PAVEMENT REPAIR AND RESTORATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Repairing and replacing streets, highways, and other pavements as required per street cut ordinance that have been cut, broken, or damaged due to utility excavation.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for pavement repair and replacement for utility projects is on a square yard basis and includes surface and base materials as required per street cut ordinance.

2. Measurement for utility projects: Match actual pavement replaced but no greater than maximum pavement replacement limits in accordance with the street cut ordinance or otherwise shown on drawings.

3. Refer to Section 01270 - Measurement and Payment for other unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this section is included in total Stipulated Price.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Subgrade:

1. Provide backfill material as required by applicable excavation and fill sections (Sections 02315 through 02319) and Section 02330 - Embankment.

2. Provide material for stabilization as required by applicable portions of Section 02336 - Lime Stabilized Subgrade, Section 02337 - Lime/Fly-Ash Stabilized Subgrade, and Section 02338 - Portland Cement Stabilized Subgrade.

B. Base: Provide base material as required by applicable portions of Section 02711 - Hot Mix Asphaltic Base Course, Section 02712 - Cement Stabilized Base Course, and Section 02713 - Crushed Concrete Base Course.

C. Pavement: Provide paving materials as required by applicable portions of Section 02741 - Asphaltic Concrete Pavement, Section 02751- Concrete Paving, Section 02754 - Concrete Driveways, and Section 02771 - Curb, Curb and Gutter, and Headers, and Section 02775 - Concrete Sidewalks.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Notify City prior to commencement of excavation in pavement for which an Excavation in Public Way permits has been obtained. Follow directions contained in the permit.

B. Conform to requirement of Section 02221 - Removing Existing Pavements and Structures, for removals.

C. Saw cut pavement 18 inches wider than width of trench needed to install utilities unless otherwise indicated on Drawings.

D. When removing pavement to existing deformed metal strip (i.e. dummy joint), saw cut pavement minimum 2 inches deep on opposite side of deformed metal strip. Place saw joint far enough behind deformed metal strip to obtain continuously straight joint. Remove damaged portion of deformed metal strip as required to provide proper joint. Saw cut and remove metal strip before placement of new concrete pavement.

E. Protect edges of existing pavement to remain from damage during removals, utility placement, backfill, and paving operations. For concrete pavement, protect undisturbed subgrade that is to remain to support replacement slab.

F. Dowel in existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by Project Manager, provide No. 6 bars 24 inches long, drilled and embedded 8 inches into center of existing slab with 'PO-ROC' epoxy grout or approved equal. Space dowels to match new pavement reinforcement spacing.

G. Provide transitional paving and earthwork as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.

### 3.02 INSTALLATION

A. Parking Areas, Service Drives, Driveways, and Sidewalks: Replace with material equal to or better than existing or as indicated on Drawings. Conform to applicable requirements of sections referenced in Paragraph 2.01, Materials.

B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base, and surface course with like materials or as indicated on Drawings and City of Houston Standard Detail 02951.01. Curbs and curbs and gutters shall match existing. Conform to requirements of sections referenced in Paragraph 2.01, Materials.

C. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on Drawings and City of Houston Standard Detail 02751.01. Place types and spacing of joints to match existing or as indicated on Drawings.

D. Where existing pavement consists of concrete pavement with asphaltic surfacing, resurface with minimum 2 inch depth asphaltic pavement.

E. Repair state highway and county crossings in accordance with TxDOT permit or county requirements as appropriate and within 1 week after utility work is installed.

3.03 WASTE MATERIAL DISPOSAL

A. Dispose of waste material in accordance with requirements of Section 01576 - Waste Material Disposal.

3.04 PROTECTION

A. Maintain pavement in good condition until completion of Work.

B. Replace pavement damaged by Contractor's operations at no cost to City.

END OF SECTION

Section 02960

# MILLING PAVEMENT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Milling of existing asphalt or concrete pavement surface as required for installation of speed humps or pavement overlay.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for removing existing pavement surface by milling is on a square yard basis. Separate pay items and measurements will be made for milling of asphalt surface or milling of concrete surface as applicable.

2. No separate payment under this section for milling associated with installation of speed humps. Payment for installation of speed humps including cost for milling of existing asphalt or concrete pavement shall be per Section 02741.
3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If the Contract is a Stipulated Price Contract, payment for work in this Section is included in the total Stipulated Price.

## PART 2 PRODUCTS

### 2.01 EQUIPMENT

A. For milling and installing of speed humps, the contractor shall use an appropriate type of milling machine to remove the existing asphalt or concrete surface as shown. The milling machine shall be capable of milling a minimum 18 inch wide path and also shall be able to turn in tight corners.

B. The teeth of the machine shall be capable of milling concrete or asphalt as appropriate. The equipment for removing the pavement surface shall be a power operated planing machine with a minimum six-foot cutting width. For detail work and for cutting widths less than six feet, equipment with less than six-foot cutting widths will be allowed. The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope. The equipment self-propelled

with sufficient power, traction and stability to maintain accurate depth of cut and slope. The equipment shall be capable of cutting four inches of asphaltic concrete pavement, one inch of portland cement concrete pavement, or a combination of two inches of asphaltic concrete pavement and one half inch portland concrete pavement in one continuous operation.

C. The equipment shall be equipped with an approved automatic dual longitudinal grade control system and a transverse control system unless otherwise directed by the project manager. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including stringline, ski, mobile stringline, or matching shoe. The transverse controls shall have an automatic system for controlling cross slope at a given rate.

D. The grade reference used by the Contractor may be of any type approved by the project manager. Control points shall be established for the finished profile. These points shall be set at intervals not to exceed 50 feet. The Contractor shall set the grade reference from the control points. The grade reference shall have sufficient support so that the maximum deflection shall not exceed 1/16 inch between supports.

E. The machine shall have a manual system providing for uniformly varying the depth of cut while the machine is in motion, thereby making it possible to cut flush to all inlets, manholes, or other obstructions within the paved area. The speed of the machine shall be variable in order to leave the desired grid pattern.

F. The machine shall be equipped with integral loading and reclaiming devices to immediately remove material being cut from the surface of the roadway and discharge the cuttings into a truck, all in one operation. The machine shall be equipped with devices to control dust created by the cutting action.

G. Various machines may be permitted to make trail runs to demonstrate the capabilities of that machine. Any machine that is incapable of meeting the requirements of this Section, in the opinion of the project manager, will not be permitted.

H. A street sweeper equipped with a water tank, spray assembly to control dust, a pick-up broom, a gutter broom, and a dirt hopper shall be provided by the Contractor. The street sweeper shall be capable of removing cuttings and debris from the planed pavement.

Other sweeping equipment may be provided in lieu of the street sweeper when approved by the project manager in writing.

I. The Contractor shall provide any other equipment and personnel necessary for proper operation of the planing machine, to minimize dust and to remove cuttings.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. The Contractor shall not mill roadway more than 7 calendar days prior to construction.

B. If Contractor does not install speed hump in the specified time, the City, without notice to the Contractor, may effect repairs to the milled area and deduct the cost of the expense incurred by the City for repair work from currently due or future invoiced amounts.

### 3.02 MILLING

A. The existing pavement to within 1 foot of the face of the curb shall be removed for a depth of one inch or otherwise designated or shown on drawing for milling of the existing pavement.

B. The pavement surface shall be removed for the length, depth and width and to the typical section shown on drawings. The planed surface shall provide a satisfactory riding surface free from gouges, continuous longitudinal grooves, ridges, oil film and other imperfections of workmanship and shall have a uniform textured appearance.

C. When removing an asphaltic concrete pavement from an underlying portland cement concrete pavement, all of the asphaltic concrete pavement shall be removed, leaving a uniform surface of portland cement concrete, unless otherwise directed by the project manager.

D. Any vertical or near vertical longitudinal face exceeding 1 ¼ inches in height in the pavement surface open to traffic at the end of a work period shall be sloped a minimum of 1:1. Transverse faces that are present at the end of a work period shall be tapered in a manner acceptable to the project manager.

E. Loose portland cement concrete material from the operation shall be disposed of at sites obtained by the Contractor or otherwise approved by the project manager. All materials removed under this contract become the property of the Contractor. Contractor shall legally dispose of all such removed materials.

F. Pavement that is not removed by the planing machine adjacent to steep curbs, inlets, manholes or other obstructions shall be removed by other methods acceptable to the project manager.

G. The pavement and curb surfaces shall be swept with a street sweeper or other sweeping equipment to remove all debris leaving a clean and presentable condition.

H. Milling is required along the outside perimeter of the hump to the depth of one inch on both concrete and asphalt pavement. Mill the existing pavement to within one foot of the curb face.

3.03 PROTECTION

A. Damage to water valve, water meters, manholes, curbs or other improvements shall be repaired or replaced at no additional cost to the City.

3.04 SURFACE TEXTURE AND TESTS

A. In areas where traffic will be permitted, the texture product shall be a grid pattern or any other pattern with discontinuous longitudinal striations that will provide, in the opinion of the project manager, a satisfactory temporary riding surface.

B. The surface of the pavement, after planing, shall be ready for HMAC overlay and shall be true to the established line, grade and cross section. The pavement surface, when tested with a 10-foot straightedge placed parallel to the centerline of the roadway or tested by other equivalent or acceptable means, shall not have any deviation greater than 1/8 inch in 10 feet. The deviations shall be measured from the top of the texture. Any point in the surface not meeting this requirement shall be corrected as directed by the project manager at the Contractor's expense.

END OF SECTION

Section 03310

# CONCRETE SLOPE PAVING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Construction of slope paving along existing ditches.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for concrete slope paving is on a square foot basis. Payment includes all concrete, reinforcing, geotextile, fine grading, excavation and backfill.

2. Payment for cement stabilized sand for slope embankment treatment shall be on square foot basis. Payment includes fine grading, excavation, compaction, and backfill.

3. Refer to Section 01270 – Measurement and Payment for unit price procedures.

### 1.03 SUBMITTALS

A. Conform to submittal requirements of Section 01330 – Submittal Procedures and Section 03315 – Concrete for Utility Construction.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Concrete: Conform to material requirements for concrete of Section 03315 – Concrete for Utility Construction.

B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 03315 – Concrete for Utility Construction.

## PART 3 EXECUTION

### 3.01 CONSTRUCTION METHODS

A. Prior to placing material, the subgrade shall be prepared to the proper section for

the width and depth of slope paving as shown on the plans.

B. Concrete slope paving shall be placed in accordance with the details and dimensions shown on the plans. Paving shall be reinforced as shown on the plans. The reinforcement shall be supported throughout to maintain its position from the top and bottom surface of the concrete.

END OF DOCUMENT

Section 03315

# CONCRETE FOR UTILITY CONSTRUCTION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Cast-in-place concrete work for utility construction or rehabilitation, such as slabs on grade, small vaults, site-cast bases for precast units, and in-place liners for manhole rehabilitation.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No payment will be made for concrete for utility construction under this Section. Include cost in applicable utility structure.

2. Obtain services of and pay for certified testing laboratory to prepare design mixes.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

### 1.03 REFERENCES

A. ACI 117 - Standard Tolerances for Concrete Construction and Materials.

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

E. ACI 308 - Standard Practice for Curing Concrete.

F. ACI 309R - Guide for Consolidation of Concrete.

G. ACI 311 - Guide for Concrete Plant Inspection and Field Testing of Ready-Mix Concrete.

H. ACI 315 - Details and Detailing of Concrete Reinforcement.

I. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary.

J. ACI 544 - Guide for Specifying, Mixing, Placing, and Finishing Steel Fiber Reinforced Concrete.

K. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

L. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

M. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

N. ASTM A 767 - Standard Specifications for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.

O. ASTM A 775 - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.

P. ASTM A 820 - Standard Specification for Steel Fibers for Fiber-Reinforced Concrete.

Q. ASTM A 884 - Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.

R. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

S. ASTM C 33 - Standard Specification for Concrete Aggregates.

T. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

U. ASTM C 42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

V. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.

W. ASTM C 138 - Standard Test Method for Unit Weight Yield and Air Content (Gravimetric) of Concrete.

X. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.

Y. ASTM C 150 - Standard Specification for Portland Cement.

Z. ASTM C 172 - Standard Practice for Sampling Freshly Mixed Concrete.

AA. ASTM C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by Volumetric Method.

AB. ASTM C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

AC. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.

AD. ASTM C 309 - Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete.

AE. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.

AF. ASTM C 595 - Standard Specification for Blended Hydraulic Cements.

AG. ASTM C 685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.

AH. ASTM C 1064 - Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete.

AI. ASTM C 1077 - Standard Practice for Laboratory Testing of Concrete and Concrete Aggregate for Use in Construction and Criteria for Laboratory Evaluation.

AJ. CRSI MSP-1 - Manual of Standard Practice.

AK. CRSI - Placing Reinforcing Bars.

AL. Federal Specification SS-S-210A - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints

AM. NRMCA - Concrete Plant Standards.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit proposed mix design and test data for each type and strength of concrete in Work.

C. Submit laboratory reports prepared by independent testing laboratory stating that materials used comply with requirements of this Section.

D. Submit manufacturer's mill certificates for reinforcing steel. Provide specimens for testing when required by Project Manager.

E. Submit certification from concrete supplier that materials and equipment used to produce and deliver concrete comply with this Specification.

F. When required on Drawings, submit shop drawings showing reinforcement type, quantity, size, length, location, spacing, bending, splicing, support, fabrication details, and other pertinent information.

G. For waterstops, submit product information sufficient to indicate compliance with this Section, including manufacturer's descriptive literature and specifications.

1.05 HANDLING AND STORAGE

A. Cement: Store cement off of ground in well-ventilated, weatherproof building.

B. Aggregate: Prevent mixture of foreign materials with aggregate and preserve gradation of aggregate.

C. Reinforcing Steel: Store reinforcing steel to protect it from mechanical injury and formation of rust. Protect epoxy-coated steel from damage to coating.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Cementitious Material:

1. Portland Cement: ASTM C 150, Type II, unless use of Type III is authorized by Project Manager; or ASTM C 595, Type IP. For concrete in contact with sewage use Type II cement.

2. When aggregates are potentially reactive with alkalis in cement, use cement not exceeding 0.6 percent alkali content in form of $Na_2O + 0.658K_20$.

B. Water: Clean, free from harmful amounts of oils, acids, alkalis, or other deleterious substances, and meeting requirements of ASTM C 94.

C. Aggregate:

1. Coarse Aggregate: ASTM C 33. Unless otherwise indicated, use following ASTM standard sizes: No. 357 or No. 467; No. 57 or No. 67, No. 7. Maximum size: Not larger than 1/5 of narrowest dimension between sides of forms, nor larger than 3/4 of minimum clear spacing between reinforcing bars.

2. Fine Aggregate: ASTM C 33.

3. Determine potential reactivity of fine and coarse aggregate in accordance with Appendix to ASTM C 33.

D. Air Entraining Admixtures: ASTM C 260.

E. Chemical Admixtures:

1. Water Reducers: ASTM C 494, Type A.

2. Water Reducing Retarders: ASTM 494, Type D.

3. High Range Water Reducers (Superplasticizers): ASTM C 494, Types F and G.

F. Prohibited Admixtures: Admixtures containing calcium chloride, thiocyanate, or materials that contribute free chloride ions in excess of 0.1 percent by weight of cement.

G. Reinforcing Steel:

1. Use new billet steel bars conforming to ASTM A 615, ASTM A 767, or ASTM A 775, grade 40 or grade 60, as shown on Drawings. Use deformed bars except where smooth bars are specified. When placed in work, keep steel free of dirt, scale, loose or flaky rust, paint, oil or other harmful materials.

2. Where shown, use welded wire fabric with wire conforming to ASTM A 185 or ASTM A 884. Supply gauge and spacing shown, with longitudinal and transverse wires electrically welded together at points of intersection with welds strong enough not to be broken during handling or placing.

3. Wire: ASTM A 82. Use 16 1/2 gauge minimum for tie wire, unless otherwise indicated.

H. Fiber:

1. Fibrillated Polypropylene Fiber:

a. Addition Rate: 1.5 pounds of fiber per cubic yard of concrete.

b. Physical Properties:

1. Material: Polypropylene

2. Length: 1/2 inch or graded

3. Specific Gravity: 0.91

c. Acceptable Manufacturer: W. R. Grace Company, Fibermesh, or approved equal.

2. Steel Fiber: Comply with applicable provisions of ACI 544 and ASTM A 820.

   a. Ratio: 50 to 200 pounds of fiber per cubic yard of concrete.

   b. Physical Properties

      1. Material: Steel

      2. Aspect Ratio (for fiber lengths of 0.5 to 2.5 inch, length divided by diameter or equivalent diameter): 30:1 to 100:1

      3. Specific Gravity: 7.8

      4. Tensile Strength: 40-400 ksi.

      5. Young's Modulus: 29,000 ksi

      6. Minimum Average Tensile Strength: 50,000 psi

      7. Bending Requirements: Withstand bending around 0.125-inch diameter mandrel to angle of 90 degrees, at temperatures not less than 60 degrees F, without breaking

I. Curing Compounds: Type 2 white-pigmented liquid membrane-forming compounds conforming to ASTM C 309.

2.02 FORM WORK MATERIALS

A. Lumber and Plywood: Seasoned and of good quality, free from loose or unsound knots, knot holes, twists, shakes, decay and other imperfections which would affect strength or impair finished surface of concrete. Use S4S lumber for facing or sheathing. Forms for bottoms of caps: At least 2 inch (nominal) lumber or 3/4 inch form plywood backed adequately to prevent misalignment. For general use, provide lumber of 1-inch nominal thickness or form plywood of approved thickness.

B. Form work for Exposed Concrete Indicated to Receive Rubbed Finish: Form or form-lining surfaces free of irregularities; plywood of 1/4 inch minimum thickness, preferably oiled at mill.

C. Chamfer Strips and Similar Moldings: Redwood, cypress, or pine that will not split when nailed and which can be maintained to true line. Use mill-cut molding dressed on all faces.

D. Form Ties: Metal or fiberglass of approved type with tie holes not larger than 7/8 inch in diameter. Do not use wire ties or snap ties.

E. Metal Forms: Clean and in good condition, free from dents and rust, grease, or other foreign materials that tend to disfigure or discolor concrete in gauge and condition capable of supporting concrete and construction loads without significant distortion. Countersink bolt and rivet heads on facing sides. Use only metal forms which present smooth surface and which line up properly.

2.03 PRODUCTION METHODS

A. Use either ready-mixed concrete conforming to requirements of ASTM C 94, or concrete produced by volumetric batching and continuous mixing in accordance with ASTM C 685.

2.04 MEASUREMENT OF MATERIALS

A. Measure dry materials by weight, except volumetric proportioning may be used when concrete is batched and mixed in accordance with ASTM C 685.

B. Measure water and liquid admixtures by volume.

2.05 DESIGN MIX

A. Use design mixes prepared by certified testing laboratory in accordance with ASTM C 1077 and conforming to requirements of this section.

B. Proportion concrete materials based on ACI 211.1 to comply with durability and strength requirements of ACI 318, Chapters 4 and 5, and this specification. Prepare mix design of Class A concrete so minimum cementitious content is 564 pounds per cubic yard. Submit concrete mix designs to Project Manager for review.

C. Proportioning on basis of field experience or trial mixtures in accordance with requirements at Section 5.3 of ACI 318 may be used, when approved by Project Manager.

D. Classification:

| Class | Type | Minimum Compressive Strength (lbs/sq. in.) | | Maximum W/C Ratio | Air Content (Percent) | Consistency Range in Slump (Inches) |
|---|---|---|---|---|---|---|
| | | 7-day | 28-day | | | |
| A | Structural | 3200 | 4000 | 0.45 | 4± 1 | 2 to 4* |
| B | Pipe Block Fill, Thrust Block | ---- | 1500 | ---- | 4± 1 | 5 to 7 |

*When ASTM C 494, Type F or Type G admixture is used to increase workability, this range may be 6 to 9.

E. Add steel or polypropylene fibers only when called for on Drawings or in another section of these Specifications.

F. Determine air content in accordance with ASTM C 138, ASTM C 173 or ASTM C 231.

G. Use of Concrete Classes: Use classes of concrete as indicated on Drawings and other Specifications. Use Class B for unreinforced concrete used for plugging pipes, seal slabs, thrust blocks, trench dams, tunnel inverts and concrete fill unless indicated otherwise. Use Class A for all other applications.

2.06 PVC WATERSTOPS

A. Extrude from virgin polyvinyl chloride elastomer. Use no reclaimed or scrap material. Submit waterstop manufacturer's current test reports and manufacturer's written certification that material furnished meets or exceeds Corps of Engineers Specification CRD-C572 and other specified requirements.

B. Flat Strip and Center-Bulb Waterstops:

1. Thickness: not less than 3/8 inch

2. Acceptable Manufacturers:

a. Kirkhill Rubber Co., Brea, California

b. Water Seals, Inc., Chicago, Illinois

c. Progress Unlimited, Inc., New York, New York

d. Greenstreak Plastic Products Co., St. Louis, Missouri

e. Approved equal.

2.07 RESILIENT WATERSTOP

A. Resilient Waterstop: Where shown on Drawings; either bentonite- or adhesive-type material.

B. Bentonite Waterstop:

1. Material: 75 percent bentonite, mixed with butyl rubber-hydrocarbon containing less than 1.0 percent volatile matter, and free of asbestos fibers or asphaltics.

2. Manufacturer's rated temperature ranges: For application, 5 to 125 degrees F; in service, -40 to 212 degrees F.
3. Cross-sectional dimensions, unexpanded waterstop: 1 inch by 3/4 inch

4. Provide with adhesive backing capable of producing excellent adhesion to concrete surfaces.

C. Adhesive Waterstop:

1. Preformed plastic adhesive waterstop at least 2 inches in diameter.

2. Meets or exceeds requirements of Federal Specification SS-S-210A.

3. Supplied wrapped completely by 2 part protective paper.

4. Submit independent laboratory tests verifying that material seals joints in concrete against leakage when subjected to minimum of 30 psi water pressure for at least 72 hours.

5. Provide primer, to be used on hardened concrete surfaces, from same manufacturer who supplies waterstop material.

6. Acceptable Manufacturer: Synko-Flex Preformed Plastic Adhesive Waterstop, Synko-Flex Products, Inc.; or approved equal.

## PART 3 EXECUTION

### 3.01 FORMS AND SHORING

A. Provide mortar-tight forms sufficient in strength to prevent bulging between supports. Set and maintain forms to lines designated such that finished dimensions of structures are within tolerances specified in ACI 117. Construct forms to permit removal without damage to concrete. Forms may be given slight draft to permit ease of removal. Provide adequate clean out openings. Before placing concrete, remove extraneous matter from within forms.

B. Install rigid shoring having no excessive settlement or deformation. Use sound timber in shoring centering. Shim to adjust and tighten shoring with hardwood timber wedges.

C. Design Loads for Horizontal Surfaces of Forms and Shoring: Minimum fluid pressure, 175 pounds per cubic foot; live load, 50 pounds per square foot. Maximum unit stresses: 125 percent of allowable stresses used for form materials and for design of support structures.

D. Back form work with sufficient number of studs and wales to prevent deflection.

E. Re-oil or lacquer liner on job before using. Facing may be constructed of 3/4 inch plywood made with waterproof adhesive backed by adequate studs and wales. In such cases, form lining will not be required.

F. Unless otherwise indicated, form outside corners and edges with triangular 3/4 inch chamfer strips (measured on sides).

G. Remove metal form ties to depth of at least 3/4 inch from surface of concrete. Do not burn off ties. Do not use pipe spreaders. Remove spreaders which are separate from forms as concrete is being placed.

H. Treat facing of forms with approved form coating before concrete is placed. When directed by Project Manager, treat both sides of face forms with coating. Apply coating before reinforcement is placed. Immediately before concrete is placed, wet surface of forms which will come in contact with concrete.

3.02 PLACING REINFORCEMENT

A. Place reinforcing steel accurately in accordance with approved Drawings. Secure steel adequately in position in forms to prevent misalignment. Maintain reinforcing steel in place using approved concrete and hot-dip galvanized metal chairs and spacers. Place reinforcing steel in accordance with CRSI Publication "Placing Reinforcing Bars." Request inspection of reinforcing steel by Project Manager and obtain acceptance before concrete is placed.

B. Minimum spacing center-to-center of parallel bars: 2 1/2 times nominal bar diameter. Minimum cover measured from surface of concrete to face of reinforcing bar unless shown otherwise on Drawings: 3 inches for surfaces cast against soil or subgrade, 2 inches for other surfaces.

C. Detail bars in accordance with ACI 315. Fabricate reinforcing steel in accordance with CRSI Publication MSP-1, "Manual of Standard Practice." Bend reinforcing steel to required shape while steel is cold. Excessive irregularities in bending will be cause for rejection.

D. Do not splice bars without written approval of Project Manager. Approved bar bending schedules or placing drawings constitute written approval. Splice and development length of bars shall conform to ACI 318, Chapters 7 and 12, and as shown on Drawings. Stagger splices or locate at points of low tensile stress.

3.03 EMBEDDED ITEMS

A. Install conduit and piping as shown on Drawings. Accurately locate and securely fasten conduit, piping, and other embedded items in forms.

B. Install waterstops as specified in other sections and according to manufacturer's instructions. Securely position waterstops at joints as indicated on Drawings. Protect waterstops from damage or displacement during concrete placing operations.

3.04 BATCHING, MIXING AND DELIVERY OF CONCRETE

A. Measure, batch, mix, and deliver ready-mixed concrete in accordance with ASTM C 94, Sections 8 through 11. Produce ready-mixed concrete using automatic batching system as described in NRMCA Concrete Plant Standards, Part 2 - Plant Control Systems.

B. Measure, mix and deliver concrete produced by volumetric batching and continuous mixing in accordance with ASTM C 685, Sections 6 though 8.

C. Maintain concrete workability without segregation of material and excessive bleeding. Obtain approval of Project Manager before adjustment and change of mix proportions.

D. Ready-mixed concrete delivered to site shall be accompanied by batch tickets providing information required by ASTM C 94, Section 16. Concrete produced by continuous mixing shall be accompanied by batch tickets providing information required by ASTM C 685, Section 14.

E. When adverse weather conditions affect quality of concrete, postpone concrete placement. Do not mix concrete when air temperature is at or below 40 degrees F and falling. Concrete may be mixed when temperature is 35 degrees F and rising. Take temperature readings in shade, away from artificial heat. Protect concrete from temperatures below 32 degrees F until concrete has cured for minimum of 3 days at 70 degrees F or 5 days at 50 degrees F.

F. Clean, maintain and operate equipment so that it thoroughly mixes material as required.

G. Hand-mix only when approved by Project Manager.

3.05 PLACING CONCRETE

A. Give sufficient advance notice to Project Manager (at least 24 hours prior to commencement of operations) to permit inspection of forms, reinforcing steel, embedded items and other preparations for placing concrete. Place no concrete prior to Project Manager's approval.

B. Schedule concrete placing to permit completion of finishing operations in daylight hours. However, when necessary to continue after daylight hours, light site as required. When rainfall occurs after placing operations are started, provide covering to protect work.

C. Use troughs, pipes and chutes lined with approved metal or synthetic material in placing concrete so that concrete ingredients are not separated. Keep chutes, troughs and pipes clean and free from coatings of hardened concrete. Allow no aluminum material to be in contact with concrete.

D. Limit free fall of concrete to 4 feet. Do not deposit large quantities of concrete at one location so that running or working concrete along forms is required. Do not jar forms after concrete has taken initial set; do not place strain on projecting reinforcement or anchor bolts.

E. Use tremies for placing concrete in walls and similar narrow or restricted locations. Use tremies made in sections, or provide in several lengths, so that outlet may be adjusted to proper height during placing operations.

F. Place concrete in continuous horizontal layers approximately 12 inches thick. Place each layer while layer below is still plastic.

G. Compact each layer of concrete with concrete spading implements and mechanical vibrators of approved type and adequate number for size of placement. When immersion vibrators cannot be used, use form vibrators. Apply vibrators to concrete immediately after depositing. Move vibrator vertically through layer of concrete just placed and several inches into plastic layer below. Do not penetrate or disturb layers previously placed which have partially set. Do not use vibrators to aid lateral flow concrete. Closely supervise consolidation to ensure uniform insertion and duration of immersion.

H. Handling and Placing Concrete: Conform to ACI 302.1R, ACI 304R and ACI 309R.

3.06 WATERSTOPS

A. Embed waterstops in concrete across joints as shown. Waterstops shall be continuous for extent of joint; make splices necessary to provide continuity in accordance with manufacturer's instructions. Support and protect waterstops during construction operations; repair or replace waterstops damaged during construction.

B. Install waterstops in concrete on one side of joints, leaving other side exposed until next pour. When waterstop will remain exposed for 2 days or more, shade and protect exposed waterstop from direct rays of sun during entire exposure and until exposed portion of waterstop is embedded in concrete.

C. Splicing PVC Waterstops:

1. Splice waterstops by heat-sealing adjacent waterstop sections in accordance with manufacturer's printed instructions.

2. Butt end-to-end joints of two identical waterstop sections may be made in forms during placement of waterstop material.

3. Prior to placement in form work, prefabricate waterstop joints involving more than two ends to be joined together, angle cut, alignment change, or joining of two dissimilar waterstop sections, allowing not less than 24 inch long strips of waterstop material beyond joint. Upon inspection and approval by Project Manager, install prefabricated waterstop joint assemblies in form work, and butt-weld ends of 24 inch strips to straight-run portions of waterstop in forms.

D. Setting PVC Waterstops:

1. Correctly position waterstops during installation. Support and anchor waterstops during progress of work to ensure proper embedment in concrete and to prevent folding over of waterstop by concrete placement. Locate symmetrical halves of waterstops equally between concrete pours at joints, with center axis coincident with joint openings. Thoroughly work concrete in joint vicinity for maximum density and imperviousness.

2. Where waterstop in a vertical wall joint does not connect with any other waterstop, and is not intended to be connected to waterstop in future concrete placement, terminate waterstop 6 inches below top of wall.

E. Replacement of Defective Field Joints: Replace waterstop field joints showing evidence of misalignment, offset, porosity, cracks, bubbles, inadequate bond or other defects with products and joints complying with Specifications.

F. Resilient Waterstop:

1. Install resilient waterstop in accordance with manufacturer's instructions and recommendations.

2. When requested by Project Manager, provide technical assistance by manufacturer's representative in field at no additional cost to City.

3. Use resilient waterstop only where complete confinement by concrete is provided; do not use in expansion or contraction joints.

4. Where resilient waterstop is used in combination with PVC waterstop, lap resilient waterstop over PVC waterstop minimum of 6 inches and place in contact with PVC waterstop. Where crossing PVC at right angles, melt PVC ribs to form smooth joining surface.

5. At free top of walls without connecting slabs, stop resilient waterstop and grooves (where used) 6 inches from top in vertical wall joints.

6. Bentonite Waterstop:

   a. Locate bentonite waterstop as near as possible to center of joint and extend continuous around entire joint. Minimum distance from edge of waterstop to face of member: 5 inches.

   b. Where thickness of concrete member to be placed on bentonite waterstop is less than 12 inches, place waterstop in grooves at least 3/4 inch deep and 1 1/4 inches wide formed or ground into concrete. Minimum distance from edge of waterstop placed in groove to face of member: 2.5 inches.

   c. Do not place bentonite waterstop when waterstop material temperature is below 40 degrees F. Waterstop material may be warmed so that it remains above 40 degrees F during placement but means used to warm it shall in no way harm material or its properties. Do not install waterstop where air temperature falls outside manufacturer's recommended range.

   d. Place bentonite waterstop only on smooth and uniform surfaces; grind concrete smooth when necessary to produce satisfactory substrate, or bond waterstop to irregular surfaces using epoxy grout which completely fills voids and irregularities beneath waterstop material. Prior to installation, wire brush concrete surface to remove laitance and other substances that may interfere with bonding of epoxy.

   e. In addition to adhesive backing provided with waterstop, secure bentonite waterstop in place with concrete nails and washers at 12 inch maximum spacing.

7. Adhesive Waterstop:

   a. With wire brush thoroughly clean concrete surface on which waterstop is to be placed and then coat with primer.

   b. If surface is too rough to allow waterstop to form complete contact, grind to form adequately smooth surface.

   c. Install waterstop with top protective paper left in place. Overlap joints between strips minimum of 1 inch and cover back over with protective paper.

   d. Do not remove protective paper until just before final form work completion. Place concrete immediately. time that waterstop material is uncovered prior to concrete placement shall be minimized and shall not exceed 24 hours.

3.07 CONSTRUCTION JOINTS

A. Definitions:

1. Construction joint: Contact surface between plastic (fresh) concrete and concrete that has attained initial set.

2. Monolithic: Manner of concrete placement to reduce or eliminate construction joints; joints other than those indicated on Drawings will not be permitted without written approval of Project Manager. Where so approved, make additional construction joints with details equivalent to those indicated for joints in similar locations.

3. Preparation for Construction Joints: Roughen surface of concrete previously placed, leaving some aggregate particles exposed. Remove laitance and loose materials by sandblasting or high-pressure water blasting. Keep surface wet for several hours prior to placing of plastic concrete.

3.08 CURING

A. Comply with ACI 308. Cure by preventing loss of moisture, rapid temperature change and mechanical injury for period of 7 curing days when Type II or IP cement has been used and for 3 curing days when Type III cement has been used. Start curing as soon as free water has disappeared from concrete surface after placing and finishing. A curing day is any calendar day in which temperature is above 50 degrees F for at least 19 hours. Colder days may be counted when air temperature adjacent to concrete is maintained above 50 degrees F. In continued cold weather, when artificial heat is not provided, removal of forms and shoring may be permitted at end of calendar days equal to twice required number of curing days. However, leave soffit forms and shores in place until concrete has reached specified 28 day strength, unless directed otherwise by Project Manager.

B. Cure formed surfaces not requiring rubbed-finished surface by leaving forms in place for full curing period. Keep wood forms wet during curing period. Add water as needed for other types of forms. Or, at Contractor's option, forms may be removed after 2 days and curing compound applied.

C. Rubbed Finish:

1. At formed surfaces requiring rubbed finish, remove forms as soon as practicable without damaging surface.

2. After rubbed-finish operations are complete, continue curing formed surfaces by using either approved curing/sealing compounds or moist cotton mats until normal curing period is complete.

D. Unformed Surfaces: Cure by membrane curing compound method.

1. After concrete has received final finish and surplus water sheen has disappeared, immediately seal surface with uniform coating of approved curing compound, applied at rate of coverage recommended by manufacturer or as directed by Project Manager. Do not apply less than 1 gallon per 180 square feet of area. Provide satisfactory means to properly control and check rate of application of compound.

2. Thoroughly agitate compound during use and apply by means of approved mechanical power pressure sprayers equipped with atomizing nozzles. For application on small miscellaneous items, hand-powered spray equipment may be used. Prevent loss of compound between nozzle and concrete surface during spraying operations.

3. Do not apply compound to dry surface. When concrete surface has become dry, thoroughly moisten surface immediately prior to application. At locations where coating shows discontinuities, pinholes or other defects, or when rain falls on newly coated surface before film has dried sufficiently to resist damage, apply additional coat of compound at specified rate of coverage.

3.09 REMOVAL OF FORMS AND SHORING

A. Remove forms from surfaces requiring rubbing only as rapidly as rubbing operation progresses. Remove forms from vertical surfaces not requiring rubbed-finish when concrete has aged for required number of curing days. When curing compound is used, do not remove forms before 2 days after concrete placement.

B. Leave soffit forms and shores in place until concrete has reached specified 28-day strength, unless directed otherwise by Project Manager.

3.10 DEFECTIVE WORK

A. Immediately repair defective work discovered after forms have been removed. When concrete surface is bulged, uneven, or shows excess honeycombing or form marks which cannot be repaired satisfactorily through patching, remove and replace entire section.

3.11 FINISHING

A. Patch honeycomb, minor defects and form tie holes in concrete surfaces with cement mortar mixed one part cement to two parts fine aggregate. Repair defects by cutting out unsatisfactory material and replacing with new concrete, securely keyed and bonded to existing concrete. Finish to make junctures between patches and existing concrete as inconspicuous as possible. Use stiff mixture and thoroughly tamp into place. After each patch has stiffened sufficiently to allow for greatest portion of shrinkage, strike off mortar flush with surface.

B. Apply rubbed finish to exposed surfaces of formed concrete structures as noted on Drawings. After pointing has set sufficiently, wet surface with brush and perform first surface rubbing with No. 16 carborundum stone, or approved equal. Rub sufficiently to bring surface to paste, to remove form marks and projections, and to produce smooth, dense surface. Add cement to form surface paste as necessary. Spread or brush material, which has been ground to paste, uniformly over surface and allow to reset. In preparation for final acceptance, clean surfaces and perform final finish rubbing with No. 30 carborundum stone or approved equal. After rubbing, allow paste on surface to reset; then wash surface with clean water. Leave structure with clean, neat and uniform-appearing finish.

C. Apply wood float finish to concrete slabs.

3.12 FIELD QUALITY CONTROL

A. Testing shall be performed under provisions of Section 01454 - Testing Laboratory Services.

B. Unless otherwise directed by Project Manager, following minimum testing of concrete is required. Testing shall be performed by qualified individuals employed by approved independent testing agency, and conform to requirements of ASTM C 1077.

1. Take concrete samples in accordance with ASTM C 172.

2. Make one set of four compression test specimens for each mix design at least once per day and for each 150 cubic yards or fraction thereof. Make, cure and test specimens in accordance with ASTM C 31 and ASTM C 39.

3. When taking compression test specimens, test each sample for slump according to ASTM C 143, for temperature according to ASTM C 1064, for air content according to ASTM C 231, and for unit weight according to ASTM C 138.

4. Inspect, sample and test concrete in accordance with ASTM C 94, Section 13, 14, and 15, and ACI 311-5R.

C. Test Cores: Conform to ASTM C 42.

D. Testing High Early Strength Concrete: When Type III cement is used in concrete, specified 7 day and 28 day compressive strengths shall be applicable at 3 and 7 days, respectively.

E. If 7-day or 3-day test strengths (as applicable for type of cement being used) fail to meet established strength requirements, extended curing or resumed curing on those portions of structure represented by test specimens may be required. When additional curing fails to produce required strength, strengthening or replacement of portions of structure which fail to develop required strength may be required by Project Manager, at no additional cost to City.

3.13 PROTECTION

A. Protect concrete against damage until final acceptance by City.

B. Protect fresh concrete from damage due to rain, hail, sleet, or snow. Provide protection while concrete is still plastic, and whenever precipitation is imminent or occurring.

C. Do not backfill around concrete structures or subject them to design loadings until components of structure needed to resist loading are complete and have reached specified 28 day compressive strength, except as authorized otherwise by Project Manager.

END OF SECTION

Section 03320

# CONCRETE RETAINING WALL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Construction of concrete retaining walls.

### 1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for concrete retaining wall is on a linear foot basis. Payment includes all concrete, reinforcing, fine grading, excavation and backfill.

2. Refer to Section 01270 – Measurement and Payment for unit price procedures.

### 1.03 SUBMITTALS

A. Conform to submittal requirements of Section 01330 – Submittal Procedures and Section 03315 – Concrete for Utility Construction.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Concrete: Conform to material requirements for concrete of Section 03315 – Concrete for Utility Construction.

B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 03315 – Concrete for Utility Construction.

## PART 3 EXECUTION

### 3.01 CONSTRUCTION METHODS

A. Concrete retaining wall shall be placed in accordance with the details and dimensions shown on the plans. Paving shall be reinforced as shown on the plans. The reinforcement shall be supported throughout to maintain its position from the top and bottom surface of the concrete.

END OF DOCUMENT