

**City of Dallas**  
**2010 ADDENDUM**  
to the  
**North Central Texas Council of Governments**  
**Public Works Construction Standards**  
**(Fourth Edition, October 2004)**

**October 1, 2010**

**The 2010 Addendum to the North Central Texas Council of Governments, Fourth Edition, © October, 2004, sets forth exceptions or requirements of the City of Dallas Water Utilities Department and the City of Dallas Department of Public Works and Transportation, and thereby takes precedence over any conditions or requirements of the Standard Specifications with which it may be in conflict.**



## Notes:

The City of Dallas 2010 Addendum is an addendum to the *Public Works Construction Standards - North Central Texas* as published by the North Central Council of Governments (NCTCOG), October 2004. This Addendum sets forth exceptions or requirements specific to the City of Dallas Water Utilities and Public Works and Transportation Departments. These specifications will take precedence over any conditions or requirements of the NCTCOG *Public Works Construction Standards, North Central Texas* that may be in conflict.

This Addendum is organized by an Item Number that is closely related to the Item Number shown in the *Public Works Construction Standards - North Central Texas*; however from time to time, the Item Numbers have been modified to account for more or fewer parameters required by the City of Dallas. In all cases, an entire section will be replaced rather than simply replacing a sentence, a word, or specific requirement.

From time to time, it may become necessary to update, change, or modify these specifications. When this happens, the latest version of these specifications will prevail. The latest version's date will be displayed prominently on the front page and within the headers of each page.

**Special Note:** On projects awarded and administered by the City of Dallas Department of Public Works and Transportation, there will be certain procedures to be followed that are somewhat different from projects that are awarded and administered by the Dallas Water Utilities. These differences are clearly marked in the specifications.

The City of Dallas Public Works and Transportation Department will utilize the latest edition of the Department of Public Works, Standard Construction Details, File 251D-1<sup>1</sup> and the North Central Texas Standard Drawings for Public Works Construction. The 251-D Standards will take precedence over the North Central Texas Standard Drawings for Public Works Construction.

If there are any questions, errors, disputes, suggestions for improvement, or other modifications that would help make this Addendum a better or more usable document, please contact the Dallas Water Utilities Engineering Services Program Manager or the Public Works and Transportation Program Manager at:

**Dallas Water Utilities  
Program Manager  
Engineering Design Services  
Suite 500  
2121 Main Street  
Dallas, Texas 75201**

**Public Works and Transportation  
Program Manager  
Construction Management  
Room 312  
320 E. Jefferson Boulevard  
Dallas, Texas 75203**

---

<sup>1</sup> Standard Construction Details "251D-1" are available from the City of Dallas Department of Public Works and Transportation, 320 E. Jefferson, Room 307, Dallas, Texas 75203 and on the Internet at:  
[http://www.dallascityhall.com/pwt/manuals\\_construction\\_standards.html](http://www.dallascityhall.com/pwt/manuals_construction_standards.html).

---

**City of Dallas**  
**2010 ADDENDUM**  
to the  
**North Central Texas Council of Governments**  
**Public Works Construction Standards**  
**(Fourth Edition, October 2004)**

**October 2010**

---

The City of Dallas acknowledges the persons who helped to put this 2010 City of Dallas Addendum together:

Susan Alvarez, P.E.
Cesar Baptista, P.E.
Leslie Castillo, P.E.
Patrick Diviney, P.E.
Ileana Fernandez
Rick Galceran, P.E.
Samir Goel, E.I.T.
Alan Hendrix, P.E.
Charles (Michael) Hines, P.E.
Theodore Keprta, P.E.
Abidur Khan, P.E.
Chad Kopecki, P.E.
Bart Longoria
Richard Lucas, P.E.
Tom Morris, P.E.
Obeng Opoku-Acheampong,
Jimmy Partain
Johnny Partain, P.E.
Matthew Penk, P.E.
Jo M. (Jody) Pucket, P.E.
Emma Jean Schumacher,
Ben A. Stephenson, P.E.

---

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 100 GENERAL PROVISIONS</b>	
<i>DIVISION 100 GENERAL PROVISIONS</i>	
101.COD: Definitions and Abbreviations .....	COD.101-1
101.0.COD: CITY OF DALLAS LEGAL HOLIDAYS .....	COD.101-1
101.1.COD: Definitions .....	COD.101-1
Bonded Warehouse .....	COD.101-1
Business Day Definition .....	COD.101-1
Calendar Day Definition.....	COD.101-1
Central Business District Definition .....	COD.101-2
Commencement of Construction Definition .....	COD.101-2
Common Plan of Development Definition .....	COD.101-2
Construction Site Notice (CSN) Definition .....	COD.101-2
Consulting Engineer Definition .....	COD.101-2
Contractor or Contractor Forces Definition.....	COD.101-2
Engineer Definition .....	COD.101-2
Midpoint of a Project Definition .....	COD.101-2
Figure 101.1.COD: Central Business District Map .....	COD.101-3
Ozone Alert or Aerial Pollution Alert .....	COD.101-4
Special Provisions or Conditions Definition .....	COD.101-4
Spill Prevention, Control, and Counter Measures Plan (SPCC) Definition .....	COD.101-4
Storm Water Pollution Prevention Plan (SWPPP) Definition .....	COD.101-4
102.COD: PROPOSAL PROCEDURES .....	COD.102-1
102.4.COD: Preparation of Proposal .....	COD.102-1
102.4.1.COD: Safety and Experience Records – Public Works and Transportation.....	COD.102-1
102.4.2.COD: Safety and Experience Records – Dallas Water Utilities.....	COD.102-2
102.7.COD: Withdrawing Proposals .....	COD.102-2
102.7.1.COD: Withdrawing Proposals – Public Works and Transportation Department.....	COD.102-2
102.7.2.COD: Withdrawing Proposals – Dallas Water Utilities Department .....	COD.102-2
102.13.COD: Return of Proposal Guaranty.....	COD.102-2
103.COD: AWARD AND EXECUTION CONTRACT .....	COD.103-1
103.2.COD: Award of Contract .....	COD.103-1
103.3.1.5.COD: Furnishing Bonds .....	COD.103-1
103.4.COD: Insurance .....	COD.103-1
103.4.1.COD: CONTRACTOR’S Insurance .....	COD.103-1
103.4.1.1.COD: Workers’ Compensation and Employers Liability Insurance .....	COD.103-2
103.4.1.2.COD: Commercial General Liability Insurance .....	COD.103-2
103.4.2.COD: Business Automotive Liability Insurance .....	COD.103-2
103.4.3.COD: Umbrella Liability Insurance .....	COD.103-2
103.4.4.COD: Railroad Protective Insurance .....	COD.103-2
103.4.5.COD: Policy Endorsements and Special Conditions .....	COD.103-2
103.4.5.1.COD: Insurance Requirements .....	COD.103-2
103.4.5.2.COD: Insurance Furnished by CONTRACTOR .....	COD.103-3
103.4.5.3.COD: CONTRACTOR Agrees To Special Conditions .....	COD.103-3

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 100 GENERAL PROVISIONS (continued)</b>	
103.4.6.1.COD: Certificate of Insurance Shall Be Delivered .....	COD.103-4
103.4.8.COD: Worker’s Compensation Insurance Coverage .....	COD.103-5
103.4.8.1.COD: Definitions .....	COD.103-5
103.4.8.1.1.COD: Certificate of Coverage (“Certificate”) .....	COD.103-5
103.4.8.1.2.COD: Coverage Based on Proper Reporting .....	COD.103-5
103.4.8.1.3.COD: Certificate Before Award of CONTRACT .....	COD.103-5
103.4.8.1.4.COD: New Certificate If Coverage Lapses .....	COD.103-5
103.4.8.1.5.COD: CONTRACTOR Shall Obtain From SUBCONTRACTORS .....	COD.103-5
103.4.8.1.6.COD: CONTRACTOR to Retain All Certificates .....	COD.103-5
103.4.8.1.7.COD: Notify OWNER If Certificate Changes .....	COD.103-5
103.4.8.1.8.COD: On-Site Notice .....	COD.103-5
103.4.8.1.9.COD: CONTRACTOR Shall Require SUBCONTRACTORS .....	COD.103-6
103.4.8.1.10.COD: Signing Contract .....	COD.103-6
103.4.8.1.11.COD: Failure to Comply .....	COD.103-6
103.7.1.COD: Bid Rejection .....	COD.103-6
103.8.COD: Order of Work to be Performed .....	COD.103-6
105.COD: Control of Work .....	COD.105-1
105.2.1.COD: Workmanship .....	COD.105-1
105.4.COD: Construction Stakes .....	COD.105-1
105.8.1.COD: Change of Address .....	COD.105-2
105.8.2.COD: Local Telephone Access .....	COD.105-2
105.9.COD: Inspection .....	COD.105-2
105.9.0.1.COD: Inspection of Work – Public Works and Transportation .....	COD.105-2
105.9.0.2.COD: Inspection of Work – Dallas Water Utilities .....	COD.105-2
105.9.2.COD: Final Inspection .....	COD.105-3
105.9.3.COD: Inspection Overtime .....	COD.105-3
105.10.COD: Acceptance .....	COD.105-4
106.COD: CONTROL OF MATERIALS .....	COD.106-1
106.2.COD: Materials and Equipment .....	COD.106-1
106.4.COD: Off-Site Storage .....	COD.106-1
107.COD: LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES .....	COD.107-1
107.13.5.COD: Equal Employment Opportunity Reporting .....	COD.107-1
107.13.6.COD: CONTRACTOR Work By Its Own Forces .....	COD.107-1
107.13.7.COD: Work Force Statement .....	COD.107-1
107.18.1.COD: City Regulations on Street Closing .....	COD.107-2
107.19.2.COD: Protection of Persons and Property .....	COD.107-2
107.19.3.1.COD: Regulations.....	COD.107-3
107.19.3.3.COD: Trench Safety Plan .....	COD.107-4
107.19.3.3.1.COD: OSHA and Pipe Design .....	COD.107-4
107.19.3.3.2.COD: Daily Inspections .....	COD.107-4

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 100 GENERAL PROVISIONS (continued)</b>	
107.19.3.3.3.COD: <i>Current Safety Program</i> .....	COD.107-4
107.19.3.3.4.COD: <i>Neighborhood Meeting</i> .....	COD.107-5
107.19.3.4.COD: <i>Shoring and Sheeting</i> .....	COD.107-5
107.19.3.7.COD: <i>Suspension of Work</i> .....	COD.107-5
107.20.COD: <i>Project Signs</i> .....	COD.107-5
107.23.2.1.COD: <i>Soil Borings</i> .....	COD.107-6
107.23.5.COD: <i>City of Dallas Contacts</i> .....	COD.107-6
107.24.1.COD: <i>Trash and Debris Removal</i> .....	COD.107-6
107.25.1.COD: <i>Spoil Removal</i> .....	COD.107-6
107.26.COD: <i>Restoration of Property</i> .....	COD.107-6
107.26.1.COD: <i>Pavement Marking Restoration</i> .....	COD.107-7
107.26.2.COD: <i>Fence Relocation and Replacement</i> .....	COD.107-7
107.26.3.COD: <i>Replacements of Sidewalks, Curbs, and / or Gutters</i> .....	COD.107-7
107.26.4.COD: <i>Damaged Paving</i> .....	COD.107-7
107.26.5.COD: <i>Site Restoration</i> .....	COD.107-7
107.27.COD: <i>Environmental Compliance</i> .....	COD.107-7
107.28.COD: <i>Texas Commission on Environmental Quality, Chapter 217 Compliance</i> .....	COD.107-10
108.COD: <b>PROSECUTION AND PROGRESS</b> .....	COD.108-1
108.1.COD: <i>Construction Schedule</i> .....	COD.108-1
108.5.COD: <b>SUBCONTRACTS</b> .....	COD.108-1
108.5.1.COD: <i>Approval of SUBCONTRACTOR</i> .....	COD.108-1
108.5.2.COD: <i>SUBCONTRACTOR Replacement</i> .....	COD.108-1
108.5.3.COD: <i>Subcontractual Relations</i> .....	COD.108-2
108.5.4.COD: <i>CONTRACTOR Assigns Claims</i> .....	COD.108-2
108.5.5.COD: <i>SUBCONTRACTOR Monthly Payments</i> .....	COD.108-3
108.5.6.COD: <i>SUBCONTRACTOR Claims; Duty of CONTRACTOR</i> .....	COD.108-3
108.7.1.COD: <i>Reasons for Suspension</i> .....	COD.108-3
108.7.2.COD: <i>No Additional Compensation</i> .....	COD.108-4
108.8.COD: <i>Delays; Extension of Time; Liquidated Damages</i> .....	COD.108-4
108.11.2.COD: <i>CONTRACTOR Action</i> .....	COD.108-4
109.COD: <b>MEASUREMENT AND PAYMENT</b> .....	COD.109-1
109.1.COD: <i>Payment for Labor and Material; No Liens</i> .....	COD.109-1
109.5.1.COD: <i>Monthly Estimate</i> .....	COD.109-1
109.5.1.1.COD: <i>Monthly Estimate – Public Works and Transportation</i> .....	COD.109-1
109.5.1.2.COD: <i>Monthly Estimate – Dallas Water Utilities</i> .....	COD.109-2
109.5.1.3.COD: <i>Payment Schedule for SUBCONTRACTORS</i> .....	COD.109-2
109.5.1.4.COD: <i>Written Submittals</i> .....	COD.109-3
109.5.4.COD: <i>Final Payment</i> .....	COD.109-3
109.5.4.1.COD: <i>Final CONTRACTOR'S Report</i> .....	COD.109-3
109.5.4.2.COD: <i>Other Documentation</i> .....	COD.109-3

**Table of Contents**

*Item* *Page*

**DIVISION 100 GENERAL PROVISIONS (continued)**

110.COD: ENVIRONMENTAL POLICY ..... COD.110-1

    110.1.COD: Environmental Policy ..... COD.110-1

        110.1.1.COD: General ..... COD.110-1

            110.1.1.1.COD: Purpose ..... COD.110-1

            110.1.1.2.COD: Instructions ..... COD.110-1

    110.2.COD: Administrative Requirements ..... COD.110-1

        110.2.1.COD: Regulatory Requirements ..... COD.110-1

    110.3.COD: City is Committed to an Environmental Policy ..... COD.110-1

    110.4.COD: Environmental Commitment is Embodied by the Following Actions ..... COD.110-1

    110.5.COD: Green Purchasing ..... COD.110-1

    110.6.COD: Air Quality and Ozone ..... COD.110-2

    110.7.COD: Material Safety Data Sheets (MSDS) ..... COD.110-2

    110.8.COD: Spills and Releases ..... COD.110-2

    110.8.(a) Table: Commonly Used Substances that may Cause Adverse Effects ..... COD.110-2

    110.9.COD: Environmental Notices of Enforcement (NOE) and Notices of Violation (NOV) ..... COD.110-2

    110.10.COD: Endangered Species ..... COD.110-3

    110.11.COD: Wetland Regulatory Authority ..... COD.110-3

    110.12.COD: Stormwater Control / Permits ..... COD.110-3

**DIVISION 200 SITE PROTECTION AND PREPARATION**

DIVISION 200 SITE PROTECTION AND PREPARATION

201.COD: TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL ..... COD.201-1

    201.3.COD: Preconstruction Submittals ..... COD.201-1

        201.3.1.COD: Stormwater Pollution Prevention Permit ..... COD.201-1

        201.3.2.COD: Notice of Intent (NOI) ..... COD.201-1

        201.3.3.COD: Notice of Termination (NOT) ..... COD.201-2

        201.3.4.COD: Storm Water Pollution Prevention Plan (SWPPP) ..... COD.201-2

        201.3.5.COD: Small Sites, Disturbed Area Equal to or Greater than 1 Acre but Less than 5 Acres (Permit Required) ..... COD.201-2

        201.3.6.COD: Large Sites, Total Disturbed Area Greater than 5 Acres (Permit and SWPPP Required) ..... COD.201-2

        201.3.7.COD: Large Sites, Total Disturbed Area Greater than 10 Acres (Permit, SWPPP, Sediment Basin, and Monitoring Required) ..... COD.201-3

        201.3.8.COD: Payment for Temporary Erosion, Sedimentation, and Water Pollution Prevention ..... COD.201-3

        201.3.9.COD: Measurement and Payment (Temporary Erosion, Sedimentation and Water Pollution Prevention and Control: Large Sites over 10 Acres) ..... COD.201-3

        201.3.10.COD: Measurement and Payment (Temporary Erosion, Sedimentation and Water Pollution Prevention and Control: Large Sites over 5 Acres) ..... COD.201-3

        201.3.11.COD: Measurement and Payment (Temporary Erosion, Sedimentation and Water Pollution Prevention and Control: Small Sites < 5 Acres) ..... COD.201-3

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 200 SITE PROTECTION AND PREPARATION (Continued)</b>	
202.COD: LANDSCAPING .....	COD.202-1
202.1.1.COD: Trees .....	COD.202-1
202.5.4.COD: Measurement and Payment (Plugging and Sodding).....	COD.202-1
202.6.5.COD: Measurement and Payment (Broadcast seeding, Discarded Seeding, and Hydraulic Mulching).....	COD.202-1
203.COD: SITE PREPARATION .....	COD.203-1
203.1.3.1.1.COD: Water Service Must Be Maintained .....	COD.203-1
203.2.COD: Maintenance of Street During Construction .....	COD.203-1
203.2.1.COD: Traffic Restrictions .....	COD.203-1
203.3.2.COD: Construction Methods .....	COD.203-2
203.3.2.1.COD: Over-excavation .....	COD.203-2
203.5.6.5.COD: Excavation for Altered Grade .....	COD.203-2
203.5.6.6.COD: Installation on Top of Fill .....	COD.203-2
203.5.6.7.COD: Glass G Embedment .....	COD.203-2
203.5.6.8.COD: Existing Curbs .....	COD.203-2
203.5.7.1.COD: Blasting .....	COD.203-3
203.8.COD: Dust Control .....	COD.203-4
203.8.1.COD: Sprinkling for Dust Control .....	COD.203-4
203.8.2.COD: Materials .....	COD.203-4
203.8.3.COD: Construction Methods .....	COD.203-4
203.8.4.COD: Measurement and Payment .....	COD.203-4

**DIVISION 300 ROADWAY CONSTRUCTION**

*DIVISION 300 ROADWAY CONSTRUCTION*

301.COD: Subgrade, Subbase, and Base Preparation .....	COD.301-1
301.1.1.2.COD: Equipment .....	COD.301-1
301.1.1.3.COD: Construction Methods .....	COD.301-1
301.1.1.3.1.COD: Subgrade Preparation .....	COD.301-1
301.1.1.3.2.COD: Utility Ditch Cuts .....	COD.301-1
301.1.1.3.3.COD: Recompacted Pavement Subgrade .....	COD.301-2
301.1.1.3.4.COD: Proof Rolling .....	COD.301-3
301.1.1.4.COD: Measurement and Payment; Preparation of Subgrade .....	COD.301-4
301.1.2.3.COD: Lime Treatment Construction Methods .....	COD.301-4
301.1.2.3.1.COD: General .....	COD.301-4
301.2.3.6.COD: Compaction .....	COD.301-5
301.2.3.7.COD: Maintenance .....	COD.301-5
301.3.3.3.1.COD: Subgrade preparation .....	COD.301-5
301.3.3.3.2.COD: Mixing and Processing for Plant-mixed Cement Treated Base .....	COD.301-5
301.3.3.8.COD: Construction Quality Control Program .....	COD.301-6
301.3.4.COD: Measurement of Work and Basis of Payment .....	COD.301-6
301.3.5.COD: Cement Stabilization of Subgrade Soils .....	COD.301-7
Table 301.3.5.(a).COD: Cement Stabilization of Subgrade Soils .....	COD.301-8
301.3.5.1.COD: Equipment Description .....	COD.301-8

**Table of Contents**

*Item* *Page*

**DIVISION 300 ROADWAY CONSTRUCTION (Continued)**

301.3.5.2.COD: Construction Methods .....	COD.301-9
301.5.COD: Flexible Subbase or Base (Crushed Stone / Concrete) .....	COD.301-10
301.5.1.COD: Material .....	COD.301-10
301.5.1.1.COD: General .....	COD.301-10
301.5.1.2.COD: Gradation .....	COD.301-10
Table 301.5.1.2.(a).COD: Gradation .....	COD.301-10
301.5.1.3.COD: Moisture .....	COD.301-11
301.5.1.4.COD: Tests .....	COD.301-11
301.5.1.5.COD: Foreign Matter .....	COD.301-11
301.5.1.6.COD: Rejection .....	COD.301-11
302.COD: Asphalt Pavement .....	COD.302-1
Table 302.2.2.2.(a).COD: Coarse Aggregate Quality Requirements .....	COD.302-1
Table 302.2.3.(a).COD: Fine Aggregate Quality Requirements .....	COD.302-1
Table 302.2.4.1.(a).COD: Mineral Filler Gradation .....	COD.302-1
302.7.4.COD: Construction Methods .....	COD.302-2
Table 302.8.2.3.(b).COD: Aggregate Tests .....	COD.302-2
302.8.3.COD: Construction Methods .....	COD.302-3
Table 302.8.3.(a).COD: Stability of Asphalt Base Course .....	COD.302-3
302.9.3.COD: Paving Mixture .....	COD.302-3
Table 302.9.3.1.(a).COD: Paving Mixture .....	COD.302-3
Table 302.9.3.(a).COD: Dense Graded Hot Mix Master Grading .....	COD.302-4
302.9.3.1.COD: Extraction Test .....	COD.302-5
Table 302.9.3.(f).COD: Asphalt Pavement Mixture Stability .....	COD.302-5
302.9.4.9.COD: Rollers .....	COD.302-5
302.9.6.7.COD: Compaction .....	COD.302-5
303.COD: Portland Cement Pavement .....	COD.303-1
303.1.COD: Description .....	COD.303-1
Table 303.2.1.1.3.(a).COD: Aggregate Tests .....	COD.303-1
Table 303.2.1.2.2.(a).COD: Grading Requirements for Fine Aggregates .....	COD.303-2
303.2.1.2.5.COD: Additional Requirements .....	COD.303-2
Table 303.2.1.3.2.(a).COD: Grading Requirements for Coarse Aggregates .....	COD.303-3
303.2.2.1.COD: Delivery .....	COD.303-3
303.2.2.1.(a).COD: Typical Concrete Batch Delivery ticket .....	COD.303-4
303.2.4.COD: Mineral Admixtures .....	COD.303-5
303.2.13.1.1.COD: Membrane-Forming Compounds .....	COD.303-5
Table 303.2.13.1.(a).COD: Membrane-Forming Compounds .....	COD.303-6
303.2.14.1.2.COD: Cold Pour Joint Sealant .....	COD.303-6
Table 303.2.14.1.2.(a).COD: Cold Pour Joint Sealant Requirements .....	COD.303-7
Table 303.2.14.1.2.(b).COD: Adhesion, Cohesion, and Resilience .....	COD.303-8

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 300 ROADWAY CONSTRUCTION (Continued)</b>	
303.3.4.2.COD: Standard Classes of Pavement Concrete .....	COD.303-8
Table 303.3.4.2.(a).COD: Standard Classes of Pavement Concrete .....	COD.303-8
303.3.6.COD: Cement Used on Public Projects – Sustainable Air Quality .....	COD.303-9
303.4.1.COD: General .....	COD.303-10
303.4.5.COD: Mechanical Vibratory Equipment .....	COD.303-10
303.4.6.COD: Vibrating Screed .....	COD.303-10
303.4.7.COD: Transverse Finishing Machine .....	COD.303-11
303.5.4.3.COD: Construction Joints .....	COD.303-11
303.5.4.7.COD: Joint Sealing .....	COD.303-11
303.5.4.7.1.COD: Hot Poured Polymer .....	COD.303-12
303.5.4.7.2.COD: Ready-Mixed Cold Applied .....	COD.303-12
303.5.4.7.3.COD: Miscellaneous Joint Sealing Procedures .....	COD.303-12
303.5.4.7.4.COD: Expansion Joint and Alternate Joint Sealing Procedures .....	COD.303-14
303.5.5.2.COD: Weather Conditions .....	COD.303-15
303.5.6.COD: Finishing .....	COD.303-16
303.5.6.1.COD: Machine .....	COD.303-16
303.5.6.2.COD: Hand Finishing .....	COD.303-16
303.5.7.COD: Curing .....	COD.303-17
Table 303.5.7.(a).COD: Water Retention by Curing Materials .....	COD.303-17
303.5.7.1.COD: Plastic Shrinkage Cracking .....	COD.303-17
Figure 303.5.7.1.(a).COD: Rate of Evaporation of Concrete .....	COD.303-18
303.5.12.COD: Mix Designs .....	COD.303-19
Concrete Mix Design Form (blank) .....	COD.303-20
Summary Results of Sieve Analysis Form (blank) .....	COD.303-21
Filled Out Example of a Concrete Mix Design Form .....	COD.303-22
Filled Out Example of a Summary Results of Sieve Analysis Form .....	COD.303-23
303.7.1.COD: Measurement and Payment .....	COD.303-24
303.8.3.1.COD: Standard Classes of Concrete Test Cylinders .....	COD.303-24
Table 303.8.3.1.(a).COD: Standard Class of Concrete Deficiency Penalties .....	COD.303-25
303.9.COD: Measurement and Payment of Portland Cement Concrete Pavement.....	COD.303-25
303.9.1.COD: Measurement and Payment of Portland Cement Concrete Pavement – Public Works and Transportation .....	COD.303-25
303.9.2.COD: Measurement and Payment of Portland Cement Concrete Pavement – Dallas Water Utilities .....	COD.303-25
305.COD: Miscellaneous Roadway Construction .....	COD.305-1
305.2.2.2.COD: Reinforcement .....	COD.305-1
305.2.3.9.COD: Construction Methods: Street Surface Milling and Resurfacing .....	COD.305-1

**Table of Contents**

*Item* *Page*

**DIVISION 400 ROADWAY MAINTENANCE AND REHABILITATION**

*DIVISION 400 ROADWAY MAINTENANCE AND REHABILITATION*

404.COD: SURFACE TREATMENT ..... COD.404-1

    404.3.1.COD: Laboratory Evaluation ..... COD.404-1

        404.3.1.1.COD: General ..... COD.404-1

        404.3.1.2.COD: Additional Specifications ..... COD.404-1

            Table 404.3.1.2.(a).COD: Test Methods for Aggregate and Mineral Filler ..... COD.404-1

            Table 404.3.1.2.(b).COD: Test Methods for Emulsified Asphalt ..... COD.404-2

            Table 404.3.1.2.(c).COD: Test methods for Slurry Seal ..... COD.404-2

        404.3.3.1.COD: Calibration ..... COD.404-2

        404.3.3.2.COD: Verification ..... COD.404-2

        404.3.3.5.COD: Auxiliary Equipment ..... COD.404-3

        404.3.4.COD: Surface Preparation ..... COD.404-3

            404.3.4.1.COD: General ..... COD.404-3

            404.3.4.2.COD: Tack Coat ..... COD.404-3

        404.3.7.COD: Limitations ..... COD.404-3

            404.3.7.1.COD: Weather ..... COD.404-3

            404.3.7.2.COD: No Slurry Shall Be Applied When: ..... COD.404-3

            404.3.7.3.COD: Purpose of Slurry Seal Application ..... COD.404-3

            404.3.7.4.COD: Condition and Type Surface to Be Treated ..... COD.404-4

            404.3.7.5.COD: Notification ..... COD.404-4

            404.3.7.6.COD: Traffic Control ..... COD.404-4

            404.3.7.7.COD: Slurry Seal Surface Treatment ..... COD.404-4

**DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES**

*DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES*

501.COD: Underground Conduit Materials ..... COD.501-1

    501.1.COD: General ..... COD.501-1

        501.4.1.1.COD: NSF 61 Compliance ..... COD.501-1

        501.5.4.1.COD: Rubber Gaskets ..... COD.501-1

    501.7.COD: Ductile-Iron Pressure Pipe and Fittings. .... COD.501-1

        501.7.1.COD: General ..... COD.501-1

        501.7.2.COD: Joints ..... COD.501-2

            Table 501.7.2.(a).COD: Ductile Iron Pressure Pipe and Fittings ..... COD.501-2

        501.7.3.COD: Coating and Lining ..... COD.501-2

        501.7.4.COD: Fittings ..... COD.501-2

            501.7.4.1.COD: NSF 61 Compliance ..... COD.501-2

        501.7.5.COD: Tests ..... COD.501-2

        501.7.6.COD: Markings ..... COD.501-2

        501.7.7.COD: Design Requirements ..... COD.501-3

        501.7.8.COD: NSF 61 Compliance ..... COD.501-3

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES (Continued)</b>	
501.9.3.COD: Pipe and Fittings Requirements .....	COD.501-3
501.9.3.1.COD: NSF 61 Compliance .....	COD.501-3
501.10.3.COD: Lead Free .....	COD.502-3
501.13.5.COD: Grout Holes .....	COD.501-3
501.14.5.COD: Fittings .....	COD.501-3
Table 501.14.5.(a).COD: PVC Water Pipe Fittings Standards .....	COD.501-4
501.14.6.COD: NSF 61 Compliance .....	COD.501-4
501.18.3.COD: Pipe Classification .....	COD.501-4
Table: 501.18.3.(a).COD: PVC Profile Gravity Pipe Standards .....	COD.501-4
501.21.6.COD: NSF 61 Compliance .....	COD.501-4
501.25.COD: PVC Pipe Materials on Hand .....	COD.501-5
502.COD: Appurtenances .....	COD.502-1
502.1.2.COD: Wastewater Manhole Grade Adjustments Risers.....	COD.502-1
502.1.4.8.COD: Wastewater Manhole Frame Seals .....	COD.502-1
502.1.4.9.COD: Interior Coatings For Manholes .....	COD.502-1
502.1.6.COD: Measurement and Payment of Manholes .....	COD.502-1
502.1.7.COD: Manhole Backfill .....	COD.501-1
502.3.COD: Fire Hydrants .....	COD.502-2
502.3.1.COD: Materials .....	COD.502-2
502.3.1.2.COD: Breakable Type Hydrants .....	COD.502-3
502.3.1.3.COD: Main Valve Seats .....	COD.502-3
502.3.1.4.COD: Nozzle Cap Chains .....	COD.502-3
502.3.1.5.COD: Flanges .....	COD.502-3
502.3.1.6.COD: Operating Stems .....	COD.502-3
502.3.1.7.COD: O-Rings .....	COD.502-4
502.3.1.8.COD: Provisions For Extension .....	COD.502-4
502.3.1.11.COD: Upperstem Thread Lubrication .....	COD.502-4
502.3.1.12.COD: Tests and Affidavit of Compliance .....	COD.502-4
502.3.1.14.COD: Rejection .....	COD.502-4
502.3.1.15.COD: Protection of Stem Threads .....	COD.502-4
502.3.2.COD: Installation .....	COD.502-4
502.3.3.COD: Measurement and Payment .....	COD.502-5
502.3.17.COD: Hydrant Approval .....	COD.502-5
502.5.1.3..COD: Design Features of Stops and Cocks .....	COD.502-5
502.5.1.3.1.COD: Ball Stop .....	COD.502-5
502.5.1.3.2.COD: Plug Type Stop .....	COD.502-5
502.5.1.3.3.COD: Inlet and Outlet Threads .....	COD.502-5

**Table of Contents**

*Item* *Page*

**DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES  
(Continued)**

502.5.1.3.4.COD: Corporation Stops .....	COD.502-5
502.5.1.3.5.COD: Curb Stop Outlets .....	COD.502-5
502.5.1.3.6.COD: Corporation Stop Outlets .....	COD.502-5
502.5.2.COD: All Other Fittings .....	COD.502-6
502.5.3.COD: Measurement and Payment .....	COD.502-6
502.6.COD: VALVES .....	COD.502-6
502.6.1.COD: Double Disk, Metal Seated Gate Valves for Ordinary Waterworks Service .....	COD.502-6
502.6.1.1.COD: General Description .....	COD.502-6
502.6.1.2.COD: Body and Bonnet .....	COD.502-7
502.6.1.2.1.COD: Bolting Materials .....	COD.502-7
502.6.1.2.2.COD: Gaskets .....	COD.502-7
502.6.1.2.3.COD: Glands .....	COD.502-8
502.6.1.3.COD: Ends .....	COD.502-8
502.6.1.4.COD: Gates and Rings .....	COD.502-8
502.6.1.5.COD: Wedging Device .....	COD.502-8
502.6.1.6.COD: Rollers, Tracks, and Scrapers for Horizontal Valves .....	COD.502-8
502.6.1.7.COD: Valve Stems and Nuts .....	COD.502-8
502.6.1.8.COD: Stuffing Boxes .....	COD.502-9
502.6.1.9.COD: Follower Glands and Gland Bolts and Nuts .....	COD.502-9
502.6.1.10.COD: Hand Wheels and Operating Nuts .....	COD.502-9
502.6.1.11.COD: Gearing .....	COD.502-9
502.6.1.12.COD: Gear Cases .....	COD.502-9
502.6.1.13.COD: By-Pass Valves .....	COD.502-9
502.6.1.14.COD: Cast Iron .....	COD.502-9
502.6.1.15.COD: Horizontal Valves .....	COD.502-9
502.6.1.16.COD: Valves for Installation in Vertical Pipelines .....	COD.502-9
502.6.1.17.COD: Tapping Valves .....	COD.502-9
502.6.1.18.COD: Tests and Inspection .....	COD.502-10
502.6.1.19.COD: Verification of Compliance with Specifications .....	COD.502-10
502.6.1.19.1.COD: Documentation .....	COD.502-10
502.6.1.20.COD: Packaging .....	COD.502-10
502.6.1.21.COD: Wrench Nuts .....	COD.502-10
502.6.1.22.COD: Design Requirements .....	COD.502-10
502.6.1.23.COD: Tapping Sleeves .....	COD.502-11
502.6.1.23.1.COD: Tapping Sleeves, Body .....	COD.502-11
502.6.1.24.COD: Flanges .....	COD.502-11
502.6.1.25.COD: Gasket .....	COD.502-11
502.6.1.26.COD: Bolts and Nuts .....	COD.502-11
502.6.1.27.COD: Finish .....	COD.502-12
502.6.1.28.COD: Pressure Rating .....	COD.502-12
502.6.1.29.COD: Restrictions .....	COD.502-12
502.6.1.30.COD: NSF 61 Compliance.....	COD.502-12

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES (Continued)</b>	
502.6.2.COD: Resilient-Seated Gate Valves for Ordinary Waterworks Service .....	COD.502-12
502.6.2.1.COD: General Description .....	COD.502-12
502.6.2.1.1.COD: CONTRACTOR Furnished Valves .....	COD.502-13
502.6.2.1.2.COD: Detailed Drawings .....	COD.502-13
502.6.2.1.3.COD: Experience .....	COD.502-13
502.6.2.1.4.COD: National Standards .....	COD.502-13
502.6.2.2.COD: Body and Bonnet .....	COD.502-13
502.6.2.3.COD: Ends .....	COD.502-13
502.6.2.4.COD: Gate .....	COD.502-13
502.6.2.5.COD: Valve Stems and Nuts .....	COD.502-13
502.6.2.6.COD: Stuffing Boxes .....	COD.502-13
502.6.2.7.COD: Follower Glands and Gland Bolts and Nuts .....	COD.502-13
502.6.2.7.1.COD: Bolting Materials .....	COD.502-13
502.6.2.8.COD: Hand Wheels and Operating Nuts .....	COD.502-13
502.6.2.9.COD: Gearing .....	COD.502-13
502.6.2.10.COD: Gear Cases .....	COD.502-13
502.6.2.11.COD: By-Pass Valves .....	COD.502-14
502.6.2.12.COD: Cast Iron .....	COD.502-14
502.6.2.13.COD: Horizontal Valves .....	COD.502-14
502.6.2.14.COD: Valves for Installation in Vertical Pipeline .....	COD.502-14
502.6.2.15.COD: Tapping Valves .....	COD.502-14
502.6.2.16.COD: Tests and Inspection .....	COD.502-14
502.6.2.16.1.COD: Proof of Design Tests .....	COD.502-14
502.6.2.16.2.COD: Verification of Compliance with Specifications .....	COD.502-14
502.6.2.17.COD: Valve Stem .....	COD.502-15
502.6.2.18.COD: Packing .....	COD.502-15
502.6.2.19.COD: Wrench Nuts .....	COD.502-15
502.6.2.20.COD: Coatings .....	COD.502-15
502.6.2.21.COD: Design Requirements .....	COD.502-16
502.6.2.22.COD: Wedge .....	COD.502-16
502.6.2.23.COD: Encapsulation .....	COD.502-16
502.6.3.COD: Air Valves .....	COD.502-16
502.6.3.1.COD: General .....	COD.502-16
502.6.3.2.COD: Description .....	COD.502-16
502.6.3.3.COD: Material .....	COD.502-16
502.6.3.4.COD: Inlets and Outlets .....	COD.502-16
502.6.3.5.COD: Operating Pressure and Testing .....	COD.502-16
502.6.3.6.COD: NSF 61 Compliance .....	COD.502-16

**Table of Contents**

*Item* *Page*

**DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES  
(Continued)**

502.6.4.COD: Brass Wheel Valves .....	COD.502-17
502.6.4.1.COD: General .....	COD.502-17
502.6.4.2.COD: Pressure Rating .....	COD.502-17
502.6.4.3.COD: Tests .....	COD.502-17
502.6.4.4.COD: Direction To Open .....	COD.502-17
502.6.4.5.COD: Material Specifications .....	COD.502-17
Table 502.6.4.5.(a).COD: Brass Wheel Valve Materials .....	COD.502-17
502.6.4.6.COD: Stem .....	COD.502-17
502.6.4.7.COD: Screwed Ends .....	COD.502-17
502.6.4.8.COD: Valve Body .....	COD.502-17
502.6.4.9.COD: Gate .....	COD.502-17
502.6.4.10.COD: Workmanship .....	COD.502-18
502.6.4.11.COD: Packaging .....	COD.502-18
502.6.5.COD: Rubber Seated Butterfly Valves .....	COD.502-18
502.6.5.1.COD: General Description .....	COD.502-18
502.6.5.2.COD: Quality Assurance .....	COD.502-18
502.6.5.2.1.COD: Detailed Drawings .....	COD.502-19
502.6.5.2.2.COD: Experience .....	COD.502-19
502.6.5.2.3.COD: Materials .....	COD.502-19
502.6.5.2.4.COD: Coatings .....	COD.502-20
502.6.5.2.4.1.COD: Interior Coatings .....	COD.502-20
502.6.5.2.4.2.COD: Exterior Coatings .....	COD.502-20
502.6.5.2.5.COD: Design Requirements .....	COD.502-21
502.6.5.2.6.COD: Flanges .....	COD.502-21
502.6.5.2.7.COD: Body .....	COD.502-21
502.6.5.2.8.COD: Disc .....	COD.502-21
502.6.5.2.9.COD: Valve Seat .....	COD.502-21
502.6.5.2.10.COD: Valve Shaft .....	COD.502-21
502.6.5.2.11.COD: Shaft Bushings .....	COD.502-22
502.6.5.2.12.COD: Shaft Thrust Bearings .....	COD.502-22
502.6.5.2.13.COD: Shaft Seals .....	COD.502-22
502.6.5.2.14.COD: Shaft Torque Capability .....	COD.502-22
502.6.5.3.COD: Ends .....	COD.502-22
502.6.5.4.COD: Valve Actuators .....	COD.502-22
502.6.5.4.1.COD: Manual Actuators .....	COD.502-22
502.6.5.4.1.1.COD: Design .....	COD.502-22
502.6.5.4.1.2.COD: Test Results .....	COD.502-22
502.6.5.4.1.3.COD: Position Indicator .....	COD.502-23
502.6.5.4.1.4.COD: Direction of Operation .....	COD.502-23

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES (Continued)</b>	
502.6.5.4.2.COD: Electric Motor Actuators .....	COD.502-23
502.6.5.4.3.COD: Other Actuators .....	COD.502-23
502.6.5.4.4.COD: Submerged Actuator .....	COD.502-23
502.6.5.4.5.COD: Packaging .....	COD.502-24
502.6.5.4.6.COD: Accessories .....	COD.502-24
502.6.5.4.7.COD: Production Tests .....	COD.502-24
502.6.5.4.8.COD: Performance Tests .....	COD.502-24
502.6.5.4.9.COD: Leakage Tests .....	COD.502-24
502.6.5.4.10.COD: Hydrostatic Tests .....	COD.502-24
502.6.5.4.11.COD: Metallurgical Testing .....	COD.502-24
502.6.5.4.12.COD: Verification of Compliance with Specifications .....	COD.502-25
502.6.6.COD: Line Valve Installation .....	COD.502-25
502.6.6.1.COD: Gate Valves .....	COD.502-25
502.6.6.2.COD: Air Release Valves .....	COD.502-25
Table 502.6.6.2.(a).COD: Air Release Valve Sizing .....	COD.602-25
502.6.7.COD: Rejection .....	COD.502-25
502.6.8.COD: Measurement and Payment .....	COD.502-25
502.10.1.COD: Definitions .....	COD.502-26
502.10.1.1.COD: NSF 61 Compliance .....	COD.502-26
502.10.3.1.1.COD: Taps .....	COD.502-26
502.10.3.1.2.COD: Tap Assemblies .....	COD.502-26
502.10.3.1.4.COD: Tapping Ductile Iron Pipe .....	COD.502-27
Table 502.10.3.1.4.(a).COD: Tapping Ductile Iron Pipe .....	COD.502-27
502.10.3.1.5.COD: Tapping Concrete Pipe .....	COD.502-27
502.10.3.1.7.COD: Tapping of PVC Pipe .....	COD.502-27
502.10.3.2.1.COD: Procedures for Transferring Service .....	COD.502-27
502.10.3.2.1.1.COD: In Advance of Paving .....	COD.502-27
502.10.3.2.1.2.COD: After Paving .....	COD.502-28
502.10.3.3.COD: NSF 61 Compliance .....	COD.502-29
502.10.4.1.COD: Service Connection .....	COD.502-29
503.COD: Trenchless Installation .....	COD.503-1
503.3.2.COD: Materials .....	COD.503-1
503.3.3.COD: Construction Methods .....	COD.503-1
503.3.3.1.COD: General .....	COD.503-1
504.COD: Open Cut – Backfill .....	COD.504-1
504.2.3.5.COD: Modified Flowable Backfill .....	COD.504-1
504.2.3.6.COD: Open Cut Wastewater Lateral and Water Services .....	COD.504-1
504.4.2.1.COD: Water For Construction .....	COD.504-1
504.4.3.COD: Sequence .....	COD.504-1

**Table of Contents**

<u>Item</u>	<u>Page</u>
<b>DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES (Continued)</b>	
504.4.4.COD: Layout .....	COD.504-1
504.5.1.1.COD: Terms .....	COD.504-2
504.5.1.3.COD: Trench Dimensions. ....	COD.504-2
504.5.3.2.COD: Compaction .....	COD.504-2
504.5.3.2.1.COD: Densities – Areas Subjected to or Influenced by Vehicular Traffic .....	COD.504-2
504.5.3.2.2.COD: Densities – Areas Not Subjected to or Influenced by Vehicular Traffic .....	COD.504-2
504.5.3.2.5.COD: Compaction Methods .....	COD.504-3
504.5.3.3.COD: Rejection .....	COD.504-3
504.6.8.COD: Four F Flowable Backfill .....	COD.504-3
504.7.2.1.1.COD: No Extra Allowances. ....	COD.504-3
504.7.3.COD: Surplus Excavation .....	COD.504-3
505.COD: Open Cut – General Conduit Installation .....	COD.505-1
505.1.3.COD: Street Cut Permit .....	COD.505-1
505.1.6.COD: Laying Underground Conduit .....	COD.505-1
505.3.COD: Damaged Pipe .....	COD.505-1
506.COD: Open Cut – Water Conduit Installation .....	COD.506-1
506.5.COD: Hydrostatic Test .....	COD.506-1
Table 506.5.(a).COD: Allowable Leakage for 4-Hours at Test Pressure of 150-PSI (Gallons) .....	COD.506-1
506.6.COD: Connections to Existing Water Conduits .....	COD.506-2
506.6.1.COD: Water Main Tie-In During Off Hours .....	COD.506-3
506.6.2.COD: Shutdown of Water Mains 20" Diameter and Larger .....	COD.506-3
506.7.COD: Disposal of Heavily Chlorinated Water Main Flushing Water .....	COD.506-3
506.7.1.COD: Preliminary Flushing .....	COD.506-3
Table 506.7.1.(a).COD: Required Flow and Openings to Flush Pipelines at 40 psi Pressure .....	COD.506-4
506.7.2.COD: Chlorination .....	COD.506-4
506.7.3.COD: Flushing .....	COD.506-4
506.7.3.2.COD: Flushing Method .....	COD.506-4
Table 506.7.3.2.(a).COD: Flushing Method Blow-off Requirements .....	COD.506-4
506.7.3.3.COD: Disposal of Flushing Water .....	COD.506-5
506.7.5.4.COD: Sampling .....	COD.506-5
506.7.6.COD: Indemnification .....	COD.506-5
506.8.1.COD: Cut and Plugs .....	COD.506-5
507.COD: Open Cut – Wastewater Conduit Installation .....	COD.507-1
507.5.1.1.COD: Infiltration test .....	COD.507-1
509.COD: Crossings .....	COD.509-1
509.4.COD: Railroad Crossings .....	COD.509-1

**Table of Contents**

*Item* *Page*

**DIVISION 600 CONDUIT AND APPURTENANCE REHABILITATION**

*DIVISION 600 CONDUIT AND APPURTENANCE REHABILITATION*

601.COD: Pipeline Rehabilitation ..... COD.601-1  
 601.4.2.COD: General Construction Requirements ..... COD.601-1  
 601.4.2.1.COD: Point Repairs on Private Property ..... COD.601-1  
 601.4.4.COD: Rehabilitation Adjacent to New Manholes ..... COD.601-1

**DIVISION 700 STRUCTURES**

*DIVISION 700 STRUCTURES*

701.COD: General Structures ..... COD.701-1  
 701.2.1.COD: Removal of Existing Structures ..... COD.701-1  
 701.2.2.COD: Removal and Salvage of Existing Structures ..... COD.701-2  
 701.2.3.COD: Adjustment of Existing Structures ..... COD.701-3  
 702.COD: Concrete Structures ..... COD.702-1  
 702.2.3.COD: Concrete Mix Design and Control ..... COD.702-1  
 702.2.4.1.COD: Consistency ..... COD.702-1  
 702.2.4.2.COD: Standard Classes ..... COD.701-2  
 Table 702.4.2.(a).COD: Standard Classes of Structural Concrete ..... COD.701-2  
 702.2.4.4.COD: Slump ..... COD.701-4  
 Table 702.4.4.(a).COD: Structural Concrete Slump Requirements ..... COD.702-4  
 702.4.8.1.COD: General ..... COD.701-4  
 Table 702.4.8.1.(a).COD: Interval Between Mixing and Placing Concrete ..... COD.701-5  
 702.4.9.COD: Finishing Concrete ..... COD.702-6  
 702.4.10.COD: Curing Concrete ..... COD.702-6

**DIVISION 800 MISCELLANEOUS CONSTRUCTION AND MATERIALS**

*DIVISION 800 MISCELLANEOUS CONSTRUCTION AND MATERIALS*

801.COD: Barriers, Warning and Detour Signs, and Fences ..... COD.801-1  
 801.4.3.COD Construction Methods ..... COD.801-1  
 801.4.3.1.COD: General ..... COD.801-1  
 802.COD: Steps and Retaining Walls ..... COD.802-1  
 802.4.3.2.COD: Backfill ..... COD.802-1  
 802.4.3.2.1.COD: Compaction Testing ..... COD.802-1  
 803.COD: Slope and Channel Protection ..... COD.803-1  
 803.3.4.COD: Measurement and Payment ..... COD.803-1  
 804.COD: Painting and Other Protective Treatments; Pavement Markings ..... COD.804-1  
 804.2.3.1.COD: Descaling, Cleaning and Preparation of Surface ..... COD.804-1  
 804.2.3.1.1.COD: Faulty Surface Preparation ..... COD.804-1  
 805.COD: Electrical Components and Conduit ..... COD.805-1  
 805.2.2.COD: Drawings ..... COD.805-1  
 805.4.COD: Conduit Construction Methods ..... COD.805-1

*(blank)*

## **DIVISION 100 GENERAL PROVISIONS**

*(blank)*

**ITEM 101.COD: DEFINITIONS AND ABBREVIATIONS**

(Page 101-1: Add the following:)

**101.0.COD: CITY OF DALLAS’ LEGAL HOLIDAYS:**

City of Dallas’ Legal Holidays	
New Year’s Day	January 1
Martin Luther King Jr.’s Birthday	Third Monday in January
President’s Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor day	First Monday in September
Thanksgiving Day	Fourth Thursday in November
Day After Thanksgiving	Friday after Thanksgiving Day
Christmas Day	December 25

*If one of these days falls on a Saturday, the holiday will be observed on the Friday before the holiday. If one of these days falls on a Sunday, the holiday will be observed on the following Monday.*

*Work requiring inspection will not be permitted on a legal City holiday, Saturday, Sunday, or any day on which the City Offices are closed for normal business, except by special written permission of the OWNER. Any work done without proper inspection is subject to removal and replacement at the direction of the OWNER.*

**ITEM 101.1.COD: DEFINITIONS:**

(Page 101-1: Add the following definition:)

**BONDED WAREHOUSE:** *A bonded warehouse, for the purposes of this document, is a storage area where materials purchased by the CONTRACTOR and paid for by the City of Dallas may be stored while awaiting installation. The Bonded Warehouse must:*

- (1) be located within the City of Dallas or Dallas County;
- (2) have adequate insurance to replace the materials stored in the event of theft or destruction (regardless of the reason); and,
- (3) be available to the OWNER for inspection and verification of the materials present.

(Page 101-1: Add the following definition:)

**BUSINESS DAY:** *A Business Day for non-construction activities is defined as the time period in which the Dallas City Hall is open for public business between the days of Monday through Friday (inclusive). In general discussions, a Business Day should be referred to as a “Business Day” (which is different from a “Calendar Day”).*

(Page 101-1: Delete the definition for **Day or Days**; Add the following definition:)

**CALENDAR DAY:** *Any successive day of the week, month, or year, no days being excepted.*

(Page 101-1: Add the following definition:)

**CENTRAL BUSINESS DISTRICT:** *For purposes of this division, the central business district is defined as that area bounded by Woodall Rodgers Freeway on the north, Julius Schepps Freeway on the east, R. L. Thornton Freeway on the south, and Stemmons Freeway on the west. (Ord. Nos. 17964; 27210). See **Figure 101.1.COD: Central Business District**, next page.*

(Page 101-1: Add the following definition:)

**COMMENCEMENT OF CONSTRUCTION:** *The initial disturbance of soils associated with clearing, grading, or excavation activities, as well as other construction-related activities (e.g., stockpiling of fill material, demolition)*

(Page 101-1: Add the following definition:)

**COMMON PLAN OF DEVELOPMENT:** *A construction activity that is completed in separate stages, separate phases, or in combination with other construction activities. Where discrete construction projects occur within a larger common plan of development or sale but are located ¼ mile or more apart, and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale, provided that any interconnecting road, pipeline or utility project that is part of the same “common plan” is not included in the area to be disturbed.*

(Page 101-1: Add the following definition:)

**CONSTRUCTION SITE NOTICE (CSN):** *For sites with less than five acres of disturbance and that are not part of a common plan of development, or located within the Escarpment, or geologically similar area; a Construction Site Notice(CSN) describing the activity shall be submitted.*

(Page 101-1: Add the following definition:)

**CONSULTING ENGINEER:** *The person, firm, or entity hired as an independent consultant by the OWNER to design the Project and represent the OWNER in the administration of the CONTRACT in whatever capacity the OWNER designates; the OWNER may, at its sole option, designate the Consulting Engineer to be the Engineer for purposes of administration of the CONTRACT. The Consulting Engineer shall be understood to be the Consulting Engineer of the OWNER, and nothing contained in the CONTRACT Documents shall be construed to make the Consulting Engineer an employee of the OWNER, nor shall they be construed to create any contractual or agency relationship between the Consulting Engineer and the CONTRACTOR. The term includes the officers, employees, associates, agents, and subconsultants of Consulting Engineer, if any.*

(Page 101-1: Add the following definition:)

**CONTRACTOR OR CONTRACTOR FORCES:** *The staff, labor, and resources directly employed by the CONTRACTOR. In all cases, the CONTRACTOR is responsible to use no less than 25% of the CONTRACTOR'S own forces to complete a project. CONTRACTOR'S forces shall be determined by Certified Payroll Reports that show that the personnel performing the claimed work are employees of the organization that was awarded the contract. The CONTRACTOR will be required to show that they pay employee taxes and benefits for all employees.*

(Page 101-1. Replace the definition of “**Engineer**”, with the following:)

**ENGINEER:** *The OWNER'S Project Manager or duly authorized representative overseeing the administration of the CONTRACT and the CONTRACTOR'S performance thereunder. Unless otherwise specifically provided in the CONTRACT Documents, the OWNER'S Project Manager is an employee of City of Dallas, and is not the Consulting Engineer.*

(Page 101-1: Add the following definition:)

**MIDPOINT OF PROJECT:** *For the purposes of this addendum, the Mid-point of a project is that point at which one-half of the CONTRACT amount, less retainage and extra work, has been paid to the CONTRACTOR for services rendered.*



(New, Page 101-2: Add the following definition

**OZONE ALERT OR AERIAL POLLUTION ALERT:** *An Ozone Alert is when, according to the National Weather Bureau or other governmentally authorized agencies declare the City of Dallas, Dallas County or locations where work is being performed for the City of Dallas, to be unhealthy because of unacceptable levels of ozone or aerial pollution. On days that are declared to be Ozone or Aerial Pollution Alert Days, work may be suspended immediately and not resume until the Ozone or Aerial Pollution Alert is canceled by an authorized agency. There shall be no additional compensation for suspension of work during a designated ozone or aerial pollution alert period*

(Page 101-2: Replace the definition of "Special Provisions or Conditions", with the following:)

**SPECIAL PROVISIONS OR CONDITIONS:** *The special clauses of the contract, setting forth conditions or requirements peculiar to the specific project involved, supplementing the standard or general specifications and taking precedence over any conditions or requirements of the standard or general specifications with which they are in conflict.*

*For purposes of this definition, the term includes any and all addendums that expressly supplement and take precedence over the general or standard specifications, regardless of whether they are peculiar to a specific project or apply to all projects.*

(New, Page 101-2: Add the following definition

**SPILL PREVENTION, CONTROL AND COUNTER MEASURES PLAN (SPCC):** *This is a document required by the Resource Conservation and Recovery Act (RCRA) for sites that have more than 1,300 gallons of hazardous fluids on site, and is a part of the permitting process.*

(New, Page 101-2: Add the following definition

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP):** *A document consisting of the following: evaluation of how and where pollutants may be mobilized by stormwater onsite, site plan for managing stormwater run off, identification of appropriate erosion and sediment controls, maintenance and inspection schedule, record keeping process, and identification of storm water discharge points from site.*

## ITEM 102.COD: PROPOSAL PROCEDURES

(Page 102-1: Replace **Item 102.4. Preparation of Proposal**, with the following: (The fourth sentence of the first paragraph has been deleted and new paragraphs have been added))

### 102.4.COD: PREPARATION OF PROPOSAL:

The bidder shall submit its proposal on the forms furnished or approved by the OWNER. All blank spaces in the form shall be correctly filled in, the bidder shall state the prices, in both words, and numerals, for which it proposes to do the work contemplated or furnish the material required. Such prices shall be written in ink distinctly and legibly. If an individual submits the proposal, that individual or duly authorized agent must sign the proposal. If an association or partnership submits the proposal, the name and address must be given and the proposal signed by a duly authorized member of the association or partnership. If a corporation submits the proposal, the corporate name and business address must be given and the proposal signed by a duly authorized corporate officer or agent. Powers of attorney authorizing agents to sign the proposal must be properly certified and must be in writing and submitted with the proposal. The proposal shall be executed in ink. When allowed by the bid documents, bids by internet, electronic mail, or facsimile are acceptable as long as all legal and bid requirements are met. The CONTRACTOR accepts all risks associated with bidding in this manner. It is understood and agreed that the proposal may not be withdrawn once the bid-opening process has begun.

*Where the OWNER intends to award a CONTRACT on an all-or-nothing basis, the lowest responsible bidder is determined by referring to the grand total of all bid line items for the Work (consisting of whatever bid items, schedules of items or alternates the OWNER advertises it may award.) The grand total is calculated by adding together the respective extended totals of the applicable bid line items. If the Bidder is not required to calculate extended totals or the grand total of all bid line items, the OWNER reserves the right to calculate the grand total based on the applicable extended totals or unit prices quoted and submitted.*

*If a Bidder makes a mathematical error in the calculation of an extended total on a line item, the amount of the bid will still be considered based on the grand total of all applicable bid line-items for the work. If a mathematical error made in an extended total has been calculated and incorporated into the grand total, the error cannot be corrected, except as provided below:*

- (1) If a mathematical error made in calculating the extended total of a line item causes the grand total of the lowest responsible bid to be higher than it would be if it were mathematically correct, but the Bidder remains the lowest responsible bidder with or without the error, the OWNER may, in its best interest, award a CONTRACT based on the mathematically correct lower number, treating the error as a waivable irregularity, as long as the overall result of the bidding is not changed thereby.*
- (2) In the event of a conflict or discrepancy between words and numbers in a bid line item, the amount of the bid item will be determined with reference to what extended total was calculated and incorporated in to the grand total of all line items bid. A conflict or discrepancy may not be calculated in a way that changes the grand total of all line items bid or overall result of bidding. The OWNER reserves the right, upon contract award, to reconfigure the unit price of the line item in which there is an error, conflict or discrepancy to make it conform with the grand total of all line items bid, for the convenience of the OWNER, as long as the grand total or the overall result of bidding is not changed.*
- (3) If there is an error in the grand total resulting solely from a mathematical error in adding together otherwise correct extended totals, the Bidder is bound by the grand total stated in the bid. **The Grand Total may be corrected only if it is in the best interest of the OWNER and the Bidder remains the lowest responsible bidder with or without the error.** These provisions do not affect the common law right of a Bidder to withdraw a bid due to a material mistake in the bid, nor do they affect the right of the OWNER to reject any and all bids for any reason.*

(Page 102-1. Replace **Item 102.4.1 Safety Record** with the following:)

### 102.4.1.COD: SAFETY AND EXPERIENCE RECORDS – PUBLIC WORKS AND TRANSPORTATION DEPARTMENT:

All CONTRACTORS bidding on City of Dallas projects to be awarded and administered by the City of Dallas Public Works and Transportation Department must submit a notarized affidavit with their bid attesting to their safety record.

The CONTRACTOR and all SUBCONTRACTORS having \$10,000 or more work on the project must provide safety records and Safety Experience Modifier Rate (EMR) from the local Occupational Safety and Health Administration (OSHA) Office in which the firm is located. The CONTRACTOR'S safety record may not reflect penalties for three (3) or more serious violations, none of which may be repeat violations, nor may it reflect three (3) or more willful

violations, none of which may be repeat violations, within the three (3) years preceding award of the contract. This information will be considered in determining the responsibility of the Bidder for purpose of awarding the contract.

Bidders shall submit a completed Experience Record questionnaire with his/her Proposal book. The record must reflect the firm's experience in work of the same nature and similar magnitude as that of the project for which bids are being received. Such experience must have been on projects completed within the last three (3) years. Resumes of key personnel to be assigned to the project must be provided with current project assignments listed.

(Page 102-1. Add the following:)

**102.4.2.COD: SAFETY AND EXPERIENCE RECORD – DALLAS WATER UTILITIES:**

All CONTRACTORS bidding on City of Dallas projects to be awarded and administered by the Dallas Water Utilities Department must submit a notarized affidavit with their bid attesting to their safety record.

The CONTRACTOR and all SUBCONTRACTORS having \$10,000 or more work on the project must provide safety records and Safety Experience Modifier Rate (EMR) from the local Occupational Safety and Health Administration (OSHA) Office in which the firm is located. The CONTRACTOR'S safety record may not reflect penalties for six (6) or more serious violations, none of which may be repeat violations, nor may it reflect three (3) or more willful violations, none of which may be repeat violations, within three (3) years preceding award of the contract. This information will be considered in determining the responsibility of the Bidder for purpose of award the contract.

Bidders shall submit a completed Experience Record questionnaire with his/her Proposal book. The record must reflect the firm's experience in work of the same nature and similar magnitude as that of the project for which bids are being received. Such experience must have been on projects completed within the last three (3) years. Resumes of key personnel to be assigned to the project must be provided with current project assignments listed.

(Page 102-2: Replace **Item 102.7. Withdrawing Proposals**, with the following: (New sections have been added for the Public Works and Transportation Department and for the Dallas Water Utilities Department. In the last sentence of each section, 90 days has been changed to 180 days and 150 days, respectively.))

**102.7.COD: WITHDRAWING PROPOSALS:**

**102.7.1.COD: WITHDRAWING PROPOSALS – PUBLIC WORKS AND TRANSPORTATION DEPARTMENT:**

On projects to be awarded and administered by the City of Dallas Public Works and Transportation Department: Proposals filed with the OWNER can be withdrawn or modified and redeposited prior to the time set for opening proposals. Request for non-consideration of proposals must be made in writing addressed to the OWNER prior to the time set for opening proposals. After other proposals are opened and publicly read, the proposal for which non-consideration is properly requested will be returned unopened. The proposal may not be withdrawn after the bid opening has commenced. The bidder, in submitting the same, warrants and represents that its bid has been carefully reviewed and checked and that it is in all things true and accurate and free of mistakes and that such bid shall not and cannot be withdrawn after opening because of any mistake committed by the bidder; provided, however, that any bidder may withdraw its bid *one-hundred eighty (180) days* after the actual date of opening thereof, should no award have been made to such bidder.

**102.7.2.COD: WITHDRAWING PROPOSALS – DALLAS WATER UTILITIES DEPARTMENT:**

On projects to be awarded and administered by the Dallas Water Utilities Department: Proposals filed with the OWNER can be withdrawn or modified and redeposited prior to the time set for opening proposals. Request for non-consideration of proposals must be made in writing addressed to the OWNER prior to the time set for opening proposals. After other proposals are opened and publicly read, the proposal for which non-consideration is properly requested will be returned unopened. The proposal may not be withdrawn after the bid opening has commenced. The bidder, in submitting the same, warrants and represents that its bid has been carefully reviewed and checked and that it is in all things true and accurate and free of mistakes and that such bid shall not and cannot be withdrawn after opening because of any mistake committed by the bidder; provided, however, that any bidder may withdraw its bid *one-hundred fifty (150) days* after the actual date of opening thereof, should no award have been made to such bidder.

(Page 102-3: Replace **Item 102.13 Return of Proposal Guaranty**, with the following:)

**102.13.COD: RETURN OF PROPOSAL GUARANTY:** *The OWNER shall return the proposal guarantees accompanying all proposals (except for the three apparent low proposals) upon request. The three apparent low proposal guarantees shall be retained by the OWNER until the required contract and surety bonds have been executed, after which they shall be returned upon request.*

## ITEM 103.COD: AWARD AND EXECUTION OF CONTRACT

(Page 103-1: Replace **Item 103.2. Award of CONTRACT**, with the following: (New sections have been added for the Public Works and Transportation Department and for the Dallas Water utilities Department. In the first sentence of each section, 90 days has been changed to 180 days and 150 days, respectively. In addition, in the last sentence, the word “awarded” has been removed.))

### 103.2.COD: AWARD OF CONTRACT:

- (1) **ON PROJECTS TO BE AWARDED AND ADMINISTERED BY THE CITY OF DALLAS PUBLIC WORKS AND TRANSPORTATION DEPARTMENT:** *The OWNER will attempt to award the CONTRACT within one-hundred eighty (180) days after the opening of proposals. The award, if made, shall be to the lowest responsible bidder; but in no case shall the award be made until after investigations are made as to the responsibility of the bidder to whom it is proposed to award the CONTRACT. If awarded the CONTRACT, the bidder shall execute the CONTRACT and furnish the required bonds and evidence of insurance within 10 days after receipt of the CONTRACT.*
- (2) **ON PROJECTS TO BE AWARDED AND ADMINISTERED BY THE DALLAS WATER UTILITIES DEPARTMENT:** *The OWNER will attempt to award the CONTRACT within one-hundred fifty (150) days after the opening of proposals. The award, if made, shall be to the lowest responsible bidder; but in no case shall the award be made until after investigations are made as to the responsibility of the bidder to whom it is proposed to award the CONTRACT. If awarded the CONTRACT, the bidder shall execute the CONTRACT and furnish the required bonds and evidence of insurance within 10 days after receipt of the CONTRACT.*

(Page 103-2. Add the following section:)

### 103.3.1.5.COD: FURNISHING BONDS: *Following are the City of Dallas requirements for furnishing bonds:*

- (1) *Must use City bond forms.*
- (2) *Must be a corporate surety (Texas Lloyd's Plan carriers are not acceptable).*
- (3) *Surety company must be an admitted carrier in the State of Texas (surplus lines carriers are not acceptable).*
- (4) *Surety company must be on the Federal Treasury list (may be waived with the concurrence of Risk Management and the City Attorney's Office, subject to individual evaluation).*
- (5) *Surety Company must have underwriting limitation sufficient to cover 100% of project cost.*

*Additional information provided by the State Board of Insurance regarding solvency, investigations, complaints, etc., will also be considered in determining the acceptability of a surety company.*

(Page 103-2. Replace **Items 103.4. INSURANCE** through **Item 103.4.5.3 CONTRACTOR Agrees to Special Conditions**, with the following:)

### 103.4.COD: INSURANCE:

*Any insurance policies required under this Item may be written in combination with any of the others, where legally permitted, but none of the specified limits may be lowered or otherwise negatively impacted by doing so, nor may any of the requirements or special provisions of this Item be limited or circumvented by doing so.*

**103.4.1.COD: CONTRACTOR'S INSURANCE:** *Without limiting any of the other obligations or liabilities of the CONTRACTOR under the CONTRACT Documents, the CONTRACTOR shall purchase and maintain, during the term of the CONTRACT, and at the CONTRACTOR'S own expense, the minimum liability insurance coverage described below with companies duly authorized or approved to do business in the State of Texas and otherwise satisfactory to OWNER. CONTRACTOR shall also require each SUBCONTRACTOR performing work under the CONTRACT, at the SUBCONTRACTOR'S own expense, to maintain during the term of the CONTRACT, levels of insurance that are necessary and appropriate for the Work performed, which levels of insurance comply with all applicable laws and are consistent with industry standards. The SUBCONTRACTOR'S liability insurance shall name the CONTRACTOR and the OWNER as additional insureds using the broadest form of endorsement available, with such status extended to include the extension of any completed operations coverage provided or required.*

*Certificates of insurance complying with the required coverage and meeting the applicable requirements of **Items 103.4.1.COD: CONTRACTOR'S Insurance** through **Item 103.4.5.3.COD: CONTRACTOR Agrees to Special Conditions**, shall be delivered to the OWNER (as per **Item 103.4.6.1.COD: Certificate Shall be Delivered**) before any work is started. CONTRACTOR shall promptly furnish, upon the request of and without expense to the OWNER, a certified copy of each policy required including all endorsements. Notice of expiration, cancellation, nonrenewal, or*

material change of or in any of the required coverages, described in this Item must be accompanied by a replacement certificate of insurance. Coverage shall be in the following types and amounts:

**103.4.1.1.COD: WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:** Workers' Compensation with statutory limits, with the policy endorsed to provide a waiver of subrogation as to the OWNER; Employer's Liability Insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee, and \$500,000 disease policy limit.

**103.4.1.2.COD: COMMERCIAL GENERAL LIABILITY INSURANCE:** Commercial General Liability Insurance, Including Personal Injury Liability, Independent CONTRACTOR'S Liability, Products and Completed Operations, and contractual Liability covering, but not limited to, the liability assumed under the indemnification provisions of this CONTRACT, fully insuring CONTRACTOR'S (or SUBCONTRACTOR'S) liability for injury to or death of OWNER'S employees and third parties, and for damage to property of third parties, with a combined bodily injury (including death) and property damage minimum limit of \$500,000 per occurrence, \$1,000,000 annual aggregate. If coverage is written on a claims-made basis, coverage shall be continuous (by renewal or extended reporting period) for no less than 60 months following completion of the CONTRACT and acceptance of work by the OWNER. Coverage, including any renewals, shall have the same retroactive date as the original policy applicable to the CONTRACT work. The OWNER and the Engineer shall be named as additional insureds using the broadest form of endorsement available, with such status extended to include extension of the completed operations coverage as described below.

The Commercial General Liability policy shall include coverage extended to apply to completed operations, asbestos hazards (if this project involves work with asbestos) and XCU hazards. The Completed Operations coverage must be maintained for a minimum of one (1) year after final completion and acceptance of the work, with evidence of same filed with OWNER. The policy shall include an endorsement CG 2503 amendment of limits (designated project or premises) in order to extend the policy's limits specifically to the project in question.

**103.4.2.COD: BUSINESS AUTOMOBILE LIABILITY INSURANCE:** Business Automobile Liability Insurance, covering owned, hired, and non-owned vehicles, with a combined bodily injury (including death) and property damage minimum limit of \$500,000 per occurrence. Such insurance shall include coverage for loading and unloading hazards.

**103.4.3.COD: UMBRELLA LIABILITY INSURANCE:** The CONTRACTOR shall obtain, pay for and maintain Umbrella Liability Insurance during the CONTRACT term, insuring CONTRACTOR for an amount of not less than \$3,000,000 per occurrence combined limit Bodily Injury (including death) and Property Damage that follows form and applies in excess of the primary liability coverages required herein above. The OWNER and Engineer shall be named as additional insureds using the broadest form of endorsement available, with such status extended to include the extension of the completed operations coverage as described in this Item. The policy shall provide "drop down" coverage where underlying primary insurance coverage limits are insufficient or exhausted.

**103.4.4.COD: RAILROAD PROTECTIVE INSURANCE:** When required in the Special Provisions, CONTRACTOR shall obtain, maintain and present evidence of railroad protective insurance (RPI). The policy shall be in the name of the railroad company having jurisdiction over the right-of-way involved and the City of Dallas, Texas. The minimum limit of coverage shall meet the specifications provided by the railroad company or the minimum requirements of this specification, whichever is greater. The OWNER shall specify the amount of RPI necessary.

**103.4.5.COD: POLICY ENDORSEMENTS AND SPECIAL CONDITIONS:**

**103.4.5.1.COD: INSURANCE REQUIREMENTS:** Each insurance policy to be furnished by CONTRACTOR shall include the following required provisions within the certificate of insurance, and within the body of the insurance contract or by endorsement to the policy:

- (1) That the OWNER, Engineer and Consulting Engineer shall be named as additional insureds on all liability coverages, using the broadest form of endorsement available, with such status extended to include the extension of the completed operations coverage as described in this Item. Where the OWNER employs a Construction Manager on Project, the CONTRACTOR, and SUBCONTRACTOR shall include the Construction Manager on all liability insurance policies to the same extent as the OWNER, Engineer, and Consulting Engineer.
- (2) Each insurance policy shall require that thirty (30) days prior to the expiration, cancellation, non-renewal, or any material change in coverage, a notice thereof shall be given to OWNER by certified mail, by sending the notice to the OWNER at the following address:

**Human Resources Department  
Risk Management Division  
1500 Marilla, 6A-South  
Dallas, Texas 75201**

Additionally, notice shall be sent to the appropriate address listed below:

For Capital Improvement Contracts on projects to be awarded and administered by the Dallas Water Utilities Department, the Certificate of Insurance shall be delivered to:

**City of Dallas Project Management**  
**Suite 300**  
**2121 Main Street**  
**Dallas, Texas 75201**

For Private Development Contracts, the certificate shall be delivered to:

**Sustainable Development and Construction Services**  
**Room 200**  
**320 E. Jefferson Boulevard**  
**Dallas, Texas 75203**

For Water or Wastewater Service Contracts, the certificate shall be delivered to:

**Water / Wastewater Service CONTRACTS**  
**Room 118**  
**320 E. Jefferson**  
**Dallas, Texas 75203**

For Public Works and Transportation Construction Contracts, the certificate shall be delivered to:

**Public Works and Transportation Construction CONTRACTS**  
**Construction Management – Room 312**  
**320 E. Jefferson**  
**Dallas, Texas 75203**

*CONTRACTOR shall notify OWNER, at the above addresses, within 24 hours after receipt, of any notice of expiration, cancellation, nonrenewal, or material change in coverage it receives from its insurer.*

- (3) *The term "OWNER" or "City of Dallas" shall include all authorities, boards, bureaus, commissions, divisions, departments and offices of the OWNER and the individual members, employees and agents thereof in their official capacities, while acting on behalf of the OWNER (the City of Dallas).*
- (4) *The policy phrase "Other Insurance" shall not apply to the OWNER where OWNER is an additional insured on the policy. The insurance coverage furnished by CONTRACTOR as required is considered to be primary insurance for purposes of the Project and the additional insureds names in the required policies.*
- (5) *All provisions of the CONTRACT Documents concerning liability, duty, and standard of care, together with the indemnification provision, shall, to the maximum extent allowable in the insurance market, be underwritten by contractual liability coverage sufficient to include such obligations with the applicable liability policies.*

**103.4.5.2.COD: INSURANCE FURNISHED BY CONTRACTOR:** *Concerning the insurance to be furnished by CONTRACTOR, it is a condition precedent to acceptability that:*

- (1) *All policies must comply with the applicable requirements and special provisions of this Item.*
- (2) *Any policy evidenced by a certificate of insurance or submitted for review shall not be subject to limitations, conditions or restrictions deemed inconsistent with the intent of the insurance requirements set forth herein, and the OWNER'S decision regarding whether any policy contains such provisions, contrary to this requirement, shall be final.*
- (3) *All required policies are to be written through companies duly authorized and approved to transact that class of insurance in the State of Texas and are otherwise acceptable to the OWNER.*

**103.4.5.3.COD: CONTRACTOR AGREES TO SPECIAL CONDITIONS:** *CONTRACTOR also agrees to the following special provisions:*

- (1) *The CONTRACTOR hereby waives subrogation rights for loss or damage to the extent same are covered by insurance. Insurers shall have no right of recovery or subrogation against the OWNER and ENGINEER it being the intention that the insurance policies shall protect all parties to the CONTRACT and be primary coverage for all losses covered by the policies. This waiver of subrogation shall be included, by endorsement or otherwise, as a provision of all policies required under this Item.*
- (2) *Insurance companies issuing the insurance policies and the CONTRACTOR shall have no recourse against the OWNER for payment of any premiums or assessments for any deductibles, as all such premiums and deductibles are the sole responsibility and risk of the CONTRACTOR.*
- (3) *Approval, disapproval or failure to act by the OWNER regarding any insurance supplied by the CONTRACTOR (or any SUBCONTRACTORS) shall not relieve the CONTRACTOR of full responsibility or liability for damage or accidents as set forth in the CONTRACT Documents. The bankruptcy, insolvency, or denial of liability of or by the CONTRACTOR'S insurance company shall likewise not exonerate or relieve CONTRACTOR from liability.*

- (4) The OWNER reserves the right to review the insurance requirements of this Item during the effective period of this CONTRACT and to modify insurance coverages and their limits when deemed necessary and prudent by OWNER's Risk Management Division, Human Resources Department, based upon economic conditions, the recommendation of professional insurance advisors, changes in statutory law, court decisions or other relevant factors. The CONTRACTOR agrees to make any reasonable request for deletion, revision or modification of particular policy terms, conditions, limitations or exclusions (except where policy provisions are established by law or regulation binding upon either party to this CONTRACT or upon underwriter of any such policy provisions). Upon request by OWNER, the CONTRACTOR shall exercise reasonable efforts to accomplish such changes in policy coverages and shall pay the cost thereof.
- (5) No special payments shall be made for any insurance policies that the CONTRACTOR and SUBCONTRACTORS are required to carry; all are included in the CONTRACT Sum.
- (6) Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the Work. These certificates and the insurance policies required shall contain a provision that coverages afforded under the policies will not be cancelled, nonrenewed, allowed to expire, or materially changed until at least thirty (30) days prior written notice has been given to the OWNER. The CONTRACTOR shall maintain the required insurance for the term of the CONTRACT. If any policy will expire during the term of the CONTRACT, the CONTRACTOR must furnish a new certificate of insurance or a certificate of renewal of the existing policy prior to the expiration date. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage shall be furnished by the CONTRACTOR to the OWNER with reasonable promptness in accordance with the CONTRACTOR'S information and belief.

If any insurance company for the CONTRACTOR, which company provides insurance required under the CONTRACT Documents, becomes insolvent or becomes the subject of any rehabilitation, conservatorship, or liquidation or similar proceeding, the CONTRACTOR shall procure, immediately upon first notice of such occurrence and without cost to the OWNER, replacement insurance coverage before continuing the performance of the Work at the Project. Any failure to provide such replacement insurance coverage shall constitute a material breach of the CONTRACT.

(Page 103-4. Add the following section:)

**103.4.6.1.COD: CERTIFICATE OF INSURANCE SHALL BE DELIVERED:**

For Capital Improvement CONTRACTS on projects to be awarded and administered by the Dallas Water Utilities Department, the Certificate of Insurance shall be delivered to:

**City of Dallas Project Management  
Suite 300  
2121 Main Street  
Dallas, Texas 75201**

For Private Development Contracts, the certificate shall be delivered to:

**Sustainable Development and Construction Services  
Room 200  
320 E. Jefferson  
Dallas, Texas 75203**

For Water or Wastewater Service Contracts, the certificate shall be delivered to:

**Water / Wastewater Service CONTRACTS  
Room 118  
320 E. Jefferson  
Dallas, Texas 75203**

For Public Works and Transportation Construction Contracts, the certificate shall be delivered to:

**Public Works and Transportation Construction CONTRACTS  
Construction Management – Room 312  
320 E. Jefferson  
Dallas, Texas 75203**

In the event the CONTRACTOR fails to do the above, the work on the CONTRACT shall be suspended. If the proper insurance is not furnished within ten days after the CONTRACT is suspended, the CONTRACT will be terminated and the CONTRACTOR shall be declared in default. The CONTRACTOR shall obtain and monitor the certificates of insurance of its SUBCONTRACTORS in order to assure that all SUBCONTRACTORS comply with requirements of

**Item 103.4.COD Insurance.** The CONTRACTOR shall have the responsibility to enforce the requirements of **Item 103.4.COD: Insurance** among its SUBCONTRACTORS.

(Page 103-4. Add the following **Item 103.4.8.COD Workers Compensation Insurance** through **Item 103.4.8.1.11.COD Failure to Comply**.)

**103.4.8.COD: WORKER'S COMPENSATION INSURANCE COVERAGE:** The State requires the CONTRACTOR to comply with the following Rule, 28 TAC §110.110, effective September 1, 1994 which Rule is reproduced substantially from the Rule as shown below:

**103.4.8.1.COD: DEFINITIONS:**

**103.4.8.1.1.COD: CERTIFICATE OF COVERAGE ("CERTIFICATE"):-** A certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

- (1) **PROJECT DURATION:** Duration of the project - includes the time from the beginning of the work on the project until the CONTRACTOR'S / person's work on the project has been completed and accepted by the OWNER.
- (2) **SUBCONTRACTOR:** Persons providing services on the project ("subcontractor" in § 406.096 of the Texas Labor Code) - includes all persons or entities performing all or part of the services the CONTRACTOR has undertaken to perform on the project, regardless of whether that person contracted directly with the CONTRACTOR and regardless of whether that person has employees. This includes, without limitation, independent contractors, SUBCONTRACTORS, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity, which furnishes persons to provide services on the project.
- (3) **SERVICES:** "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

**103.4.8.1.2.COD: COVERAGE BASED ON PROPER REPORTING:** The CONTRACTOR shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the contractor providing services on the project, for the duration of the project.

**103.4.8.1.3.COD: CERTIFICATE BEFORE AWARD OF CONTRACT:** The CONTRACTOR must provide a certificate of insurance to the OWNER prior to being awarded the contract.

**103.4.8.1.4.COD: NEW CERTIFICATE IF COVERAGE LAPSES:** If the coverage period shown on the CONTRACTOR'S current certificate of coverage ends during the duration of the project, the CONTRACTOR must, prior to the end of the coverage period, file a new certificate of insurance with the OWNER showing that coverage has been renewed for another policy term.

**103.4.8.1.5.COD: CONTRACTOR SHALL OBTAIN FROM SUBCONTRACTORS:** The CONTRACTOR shall obtain from each person providing services on a project, and provide to the OWNER at the OWNER's request:

- (1) **Insurance for All Workers:** A certificate of insurance, prior to that person beginning work on the project, so the OWNER will have on file certificates of coverage showing coverage for all persons providing services on the project; and
- (2) **New Certificate if Coverage Lapse:** No later than seven days after receipt by the CONTRACTOR, a new certificate of insurance showing that coverage has been renewed for another policy term, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

**103.4.8.1.6.COD: CONTRACTOR TO RETAIN ALL CERTIFICATES:** The CONTRACTOR shall retain all required certificates of insurance for the duration of the project and for one year thereafter and shall have the responsibility of enforcing insurance requirements among its SUBCONTRACTORS. The CITY shall be entitled, upon request and without expense, to receive copies of these certificates.

**103.4.8.1.7.COD: NOTIFY OWNER IF CERTIFICATE CHANGES:** The CONTRACTOR shall notify the OWNER in writing by certified mail or personal delivery, within 10 days after the CONTRACTOR knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

**103.4.8.1.8.COD: ON-SITE NOTICE:** The CONTRACTOR shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

**103.4.8.1.9.COD: CONTRACTOR SHALL REQUIRE SUBCONTRACTORS:** The CONTRACTOR shall contractually require each SUBCONTRACTOR with whom it contracts to provide services on a project, to:

- (1) **Provide Coverage:** Provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;
- (2) **Insurance Before Beginning Work:** Provide to the CONTRACTOR, prior to that person beginning work on the project, a certificate of insurance showing coverage is being provided for all employees of the person providing services on the project, for the duration of the project;
- (3) **SUBCONTRACTOR to Provide Coverage:** Provide the CONTRACTOR, prior to the end of the coverage period, a new certificate of insurance showing coverage has been renewed for another policy term, if the coverage period shown on the current certificate of coverage ends during the duration of the project.
- (4) **CONTRACTOR to Obtain From Each SUBCONTRACTOR:** Obtain from each other person with whom it contracts, and provide to the CONTRACTOR:
  - (a) **A Certificate of Insurance:** A certificate of insurance, prior to the other person beginning work on the project; and
  - (b) **A New Certificate if Old One Lapses:** A new certificate of insurance showing coverage has been renewed for another policy term, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (5) **Contractually Require SUBCONTRACTORS Perform:** To contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (5), with the certificates of insurance to be provided to the person or department for whom they are providing services.

**103.4.8.1.10.COD: SIGNING CONTRACT:** By signing this CONTRACT or providing or causing to be provided a Certificate of Insurance, the CONTRACTOR is representing to the OWNER that all employees of the CONTRACTOR and SUBCONTRACTORS who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

**103.4.8.1.11.COD: FAILURE TO COMPLY:** The CONTRACTOR'S failure to comply with any of these provisions is a breach of contract by the CONTRACTOR, which entitles the OWNER to declare the contract void if the CONTRACTOR does not remedy the breach within ten days after receipt of notice of breach from the OWNER.

(Page 103-4. Add the following:)

**103.7.1. BID REJECTION:** Award will be subject to approval of prices by the responsible City of Dallas Department. The OWNER reserves the right to reject any or all bids and to accept or reject any or all schedules.

(Page 103-4. Add the following:)

**103.8.COD: ORDER OF WORK TO BE PERFORMED:** After a CONTRACT has been awarded and before the "Notice To Proceed" is issued, the OWNER reserves the right to prioritize the order of the work to be performed.

## ITEM 105.COD: CONTROL OF WORK

(Page 105-1. Replace **Item, 105.2.1. Workmanship**, with the following:)

**105.2.1.COD: WORKMANSHIP:** *If the OWNER notifies the CONTRACTOR in writing of defective work, the CONTRACTOR shall correct the deficiencies within fourteen (14) calendar days of the Notice at no additional cost to the OWNER. If the defective work is not corrected within fourteen (14) calendar days, or the CONTRACTOR is not making satisfactory progress (in the opinion of the OWNER) to correct the deficiencies, the OWNER may withhold future payments for All Work until the defective work has been corrected to the satisfaction of the OWNER.*

(Page 105-3. Replace **Item 105.4. Construction Stakes** with the following:)

### **105.4.COD: CONSTRUCTION STAKES:**

*The CONTRACTOR shall be responsible for all required Construction Staking associated with the project.*

*The CONTRACTOR is responsible for maintaining all survey control points and monuments in the construction area at all times and any costs for re-staking or re-establishing controls required shall be borne by the CONTRACTOR.*

*It is the CONTRACTOR'S responsibility to preserve all control points provided by the Engineer. Any stakes deemed necessary in addition to control points will be the responsibility of the CONTRACTOR. Control points provided by the ENGINEER which have been destroyed or disturbed by the CONTRACTOR will be replaced by the Engineer, and the charge for any such replacement will be the OWNER's actual cost of replacement, which will be deducted from the CONTRACTOR'S monthly payments.*

*It is the responsibility of the CONTRACTOR to check all control points, lines, and grades with the intent of the plans and specifications and to report any errors, omissions, conflicts, or discrepancies to the Engineer. The CONTRACTOR will be held responsible for any subsequent error, omission, conflict or discrepancy, which might have been avoided by the above-described check as, provided in **Item 105.1.6 of the General Conditions**.*

*The CONTRACTOR shall be responsible for all construction staking on this project. There shall be no separate pay item for staking. All staking shall be considered incidental to the pay items of work provided in the contract.*

*The ENGINEER has established and monumented vertical and horizontal control, as indicated on the construction plans. This control shall be utilized as datum and control for construction staking. All construction staking done by the contractor shall be done under the supervision of qualified and skilled personnel. All construction and staking sequencing shall be approved in advance by the OWNER'S Survey Services Division and coordinated with OWNER'S Construction Superintendent.*

*Copies of survey notes demonstrating third order level of accuracy shall be furnished to the OWNER within two weeks after the survey completion for final stakeout of the major project components. The furnished survey notes shall include the final vertical and horizontal stakeout notes for all drainage, street paving, structural, water, or sanitary sewer improvements. Alignments shall be tied to horizontal control with sufficient calls provided to delineate centerline. The location or monumentation of any real property boundaries or easements required for construction will require a Registered Professional Land Surveyor in Texas as required by article 5282c of the Vernon's Texas Civil Statutes.*

*The OWNER will perform or confirm the initial and final measurement for payment and reserves the right to field verify any stakes placed, measurements for payment made and any work performed by the CONTRACTOR.*

*When applicable, Costs for Construction Staking are paid under the appropriate bid item number included in the CONTRACT DOCUMENTS. In all other cases, Construction Staking is contingent to the rest of the project.*

*For projects administered by Dallas Water Utilities, typed Cut Sheets must be submitted no later than 3:00 PM the day prior to the scheduled start of construction to:*

**Mapping Manager**  
**320 E. Jefferson Boulevard, Room 215**  
**Dallas, Texas 75203**  
**Phone: (214) 948-4584**  
**Fax: (214) 948-4599**

*For projects administered by the City of Dallas Public Works and Transportation Department, typed Cut Sheets must be submitted no later than 3:00 P.M. The day prior to the scheduled start of construction to:*

**Construction Superintendent**  
**320 East Jefferson Boulevard, Room 312**  
**Dallas, Texas 75203**

(Page 105-4. Add the following:)

**105.8.1.COD: CHANGE OF ADDRESS:** *If the CONTRACTOR has a change of address, the notice must be submitted on company letterhead, signed by an officer of the company, and forwarded to:*

**Director of Purchasing  
Room 3/F/S, City Hall  
1500 Marilla  
Dallas, Texas 75201**

With a copy to:

**Capital Improvements Program  
Project Manager  
2121 Main St., Suite 300  
Dallas, Texas 75201**

And with a Copy to:

**Public Works and Transportation  
Construction Management  
320 E. Jefferson., Room 312  
Dallas, Texas 75203**

(Page 105-4. Add the following: )

**105.8.2.COD: LOCAL TELEPHONE ACCESS:** *The CONTRACTOR shall provide a telephone number, which will be answered by a representative during normal business hours and answered either live or electronically, outside normal business hours with said calls returned within one hour. The phone shall be accessible by direct dial without long distance charges for all citizens in the construction area and the City of Dallas personnel.*

(Page 105-4. Replace **Item 105.9 Inspection** with the following: (New sections have been added for the Public Works and Transportation Department and for the Dallas Water Utilities Department.)

**105.9.COD: INSPECTION.**

**105.9.0.1.COD: INSPECTION OF WORK – PUBLIC WORKS AND TRANSPORTATION:** *This item concerns projects awarded and administrated by the City of Dallas Department of Public Works and Transportation. The scheduled start of construction for each location shall be coordinated with the Public Works and Transportation Construction Superintendent a minimum of ten (10) days prior to the requested start date. Actual start date is dependent upon approval and issuance of a “Public Relations” letter from the PWT Project Manager. Inspection of work associated with Department of Public Works and Transportation projects will be done by the Construction Management Section of the Department of Public Works. Inspections shall be requested through the appropriate PWT Construction Superintendent a minimum of 24 hours prior to the need for inspection.*

*The CONTRACTOR shall assure that the Public Works and Transportation Construction Superintendent is aware of any work being performed on the project prior to the work taking place, and the CONTRACTOR should obtain written verification from the OWNER if an inspection is not needed before proceeding with any particular item of work. The CONTRACTOR must pay for all removal and replacement or testing requested to determine acceptability for any work done without proper inspection, as directed by the OWNER.*

*The CONTRACTOR shall furnish the OWNER with every reasonable facility for ascertaining whether or not the work performed was in accordance with the requirements and intent of the plans and specifications. Any work done or materials used without suitable inspection by the OWNER may be ordered removed and replaced at the CONTRACTOR'S expense.*

**105.9.0.2.COD: INSPECTION OF WORK – DALLAS WATER UTILITIES:** *This item concerns projects awarded and administrated by the Dallas Water Utilities Department The scheduled start of construction for each location shall be coordinated with the Dallas Water Utilities Construction Superintendent a minimum of ten (10) days prior to the requested start date. Actual start date is dependent upon approval and issuance of a “Public Relations” letter from the DWU Project Manager. . Inspection of work associated with Dallas Water Utilities projects will be done by Dallas Water Utilities. Inspections shall be requested through the appropriate Dallas Water Utilities Construction Superintendent a minimum of 24 hours prior to the need for inspection.*

*The CONTRACTOR shall furnish the OWNER with every reasonable facility for ascertaining whether or not the work performed was in accordance with the requirements and intent of the plans and specifications. Any work done or materials used without suitable inspection by the OWNER may be ordered removed and replaced at the CONTRACTOR'S expense.*

*Some work may not require the presence of an inspector, and the CONTRACTOR should obtain written verification from the OWNER that an inspector is not needed before proceeding with that particular item of work. The CONTRACTOR must pay for all removal and replacement or testing requested to determine acceptability for any work done without proper inspection, as directed by the OWNER.*

(Page 105-5. Replace **Item 105.9.2. Final Inspection** and **Item 105.9.2.1.Acceptance**, with the following: (There is a new sentence in the first paragraph and at the end of **Item 105.9.2.1.COD: Acceptance**.)

**105.9.2.COD: FINAL INSPECTION:** *Whenever the improvements provided for by the CONTRACT shall have been completely performed on the part of the CONTRACTOR, the CONTRACTOR shall notify the OWNER that the improvement is ready for final inspection. If the work is not acceptable to the OWNER at the time of such inspection, OWNER shall inform CONTRACTOR as to the particular defects to be remedied before final acceptance shall be made. The OWNER will notify the CONTRACTOR of the time allowed for correction of the items found during the Final Inspection. The OWNER shall make a final inspection of all work included in the CONTRACT as soon as practicable after remedies have been made and the work is ready for acceptance.*

(Page 105-5. Replace **Item 105.9.3. Inspection Overtime**, with the following:)

**105.9.3.COD: INSPECTION OVERTIME:**

*The CONTRACTOR will be required to reimburse the OWNER for the cost of all inspection overtime, which may be necessary for the successful and expeditious prosecution of the work included in this CONTRACT.*

*Inspection overtime will not be charged if the OWNER required the CONTRACTOR to work during overtime periods because of restrictions for water main tie-ins, traffic requirements, or other periods that inspection would normally be charged as determined by the OWNER. The OWNER's decision shall be final.*

*Except in an emergency situation, the CONTRACTOR shall be required to furnish in writing to the OWNER, not less than 36 hours in advance, a request to work overtime on Saturday, Sunday, Holiday, or any day on which the City Offices are closed for normal business. A written request is not required for overtime work on a weekday. Overtime will be scheduled at the discretion of the OWNER. The CONTRACTOR is not guaranteed that overtime will be accommodated.*

*Reimbursements for overtime work of Dallas Water Utilities Inspectors shall be made directly to Dallas Water Utilities. Checks should be made payable to Dallas Water Utilities and mailed or hand carried to:*

**Accounting and Finance Dept.  
Construction/Cost Accounting  
5/A/N City Hall  
1500 Marilla  
Dallas, Texas 75201**

*Reimbursements for overtime work of Public Works and Transportation Inspectors shall be made directly to the City of Dallas PWT Construction Superintendent. Checks should be made payable to the City of Dallas and mailed or hand carried to:*

**Public Works and Transportation.  
Construction Management  
320 E. Jefferson  
Room 312  
Dallas, Texas 75203**

*Unless otherwise specified in the CONTRACT, inspection overtime will be charged to the CONTRACTOR, with the number of inspectors to be determined by the OWNER under the following overtime conditions:*

- (1) Weekdays between the hours of Midnight to 7:30 a.m. and between 4:30 p.m. to Midnight, at a rate of \$50.00 per hour per Inspector.*
- (2) Saturdays, Sundays and Holidays between midnight to midnight with a minimum of four (4) hours, at rate of \$50.00 per hour per Inspector and a minimum of \$200 per day per inspector.*

*Inspection fees will be accumulated during the monthly estimate period. A statement of charges for the estimate period will be provided to the CONTRACTOR. The statement of charges must be paid prior to the OWNER processing the next submitted estimate. PAYMENT IS DUE WITHIN TEN (10) DAYS AFTER THE DATE OF THE INVOICE. If payment is not made as due, the OWNER reserves the right to deduct or withhold amounts due from the monthly progress payment or final payment, pursuant to **Item 109.4. Payment Withheld**, of the Standard Specifications.*

**105.10.COD: ACCEPTANCE:** *Once the work is satisfactory to the OWNER and in accordance with the specifications and CONTRACT documents, the CONTRACTOR shall be issued a certificate of acceptance. The Certificate of Acceptance will not be issued until all work required by contract, including all water and wastewater appurtenances have been adjusted to their final position.*

## ITEM 106.COD: CONTROL OF MATERIAL

(Page 106-1. Replace **Item 106.2. Materials and Equipment**, with the following: A third paragraph has been added)

**106.2.COD: MATERIALS AND EQUIPMENT:** The CONTRACTOR shall be free to obtain the approved materials, equipment, and articles from sources of its own selection. However, if the OWNER finds that the work shall be delayed or adversely affected in any way because a selected source of supply cannot furnish a uniform product in sufficient quantity and at the time required and a suitable source does exist, or the product is not suitable for the work, the OWNER shall have the right to require the original source of supply changed by the CONTRACTOR. The CONTRACTOR shall have no claim for extra cost or damage because of this requirement.

The CONTRACTOR warrants to the OWNER that all materials and equipment furnished under this CONTRACT shall be new unless otherwise specified in the CONTRACT documents and that same shall be of good quality and workmanship, free from faults and defects and in conformance with the CONTRACT documents. All materials and equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective and shall be promptly repaired or replaced by the CONTRACTOR at the CONTRACTOR'S sole cost upon demand of the OWNER. If required by the OWNER, the CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

*Material and equipment furnished that are not specified elsewhere shall conform to the current "DALLAS WATER UTILITIES APPROVED MATERIALS BY TRADE NAME LISTING FOR WATER DISTRIBUTION or WASTEWATER COLLECTIONS (as Appropriate)", the PUBLIC WORKS AND TRANSPORTATION CONSTRUCTION SPECIFICATIONS", or approved equal.*

(Page 106-1. Replace **Item 106.4. Off-Site Storage**, with the following:

**106.4.COD: OFF-SITE STORAGE:** *Payment for costs incurred in storage of materials not yet incorporated into the project may be made by the OWNER if all the following conditions are met:*

- (1) the OWNER has approved the off-site storage location, in writing;*
- (2) the materials will not be incorporated into the project within the next 60 days;*
- (3) the material is stored in a bonded warehouse, as defined in **Item 101.1.COD: Definitions**, identified with the project name and stored separate from normal inventory;*
- (4) an official PAID receipt from the material SUPPLIER is provided; and*
- (5) CONTRACTOR may invoice only for the amount actually paid for the material.*

*Storage in facilities of the manufacturer or CONTRACTOR will not be permitted or paid for, unless such storage location is expressly approved in writing by the OWNER.*

*(blank)*

## ITEM 107.COD: LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES

(Page 107-3. Replace Item 107.13.5. Reports, with the following:)

**107.13.5.COD: EQUAL EMPLOYMENT OPPORTUNITY REPORTING:** *During the course of the work, the CONTRACTOR shall submit to the OWNER, on a monthly basis, a breakdown by minority group of all employees at the site of the work. The CONTRACTOR must submit to the OWNER on a monthly basis, a copy of each weekly payroll pertaining to his CONTRACT as follows:*

*Dallas Water Utilities Contracts:*

**Capital Improvements Program  
Project Manager  
2121 Main St., Suite 300  
Dallas, Texas 75201**

*Public Works and Transportation Contracts:*

**Public Works and Transportation  
Construction Management  
320 E. Jefferson, Room 312  
Dallas, Texas 75203**

*These shall be coded as follows:*

<b>Code</b>	<b>Description</b>
<b>A1</b>	<b>Black Male</b>
<b>A2</b>	<b>Black Female</b>
<b>B1</b>	<b>Hispanic Male</b>
<b>B2</b>	<b>Hispanic Female</b>
<b>C1</b>	<b>Other Male</b>
<b>C2</b>	<b>Other Female</b>
<b>D1</b>	<b>White Male</b>
<b>D2</b>	<b>White Female</b>

(Page 107-3. Add the following:)

**107.13.6.COD: CONTRACTOR WORK BY ITS OWN FORCES:** *Except as otherwise provided, the CONTRACTOR shall perform no less than 25 percent (25%) of the work with their own forces as defined in **Item 101.1.COD: Definitions.** The on-site production of materials produced by other than the CONTRACTOR'S forces shall be considered as being subcontracted. If, during the progress of work hereunder, the CONTRACTOR requests a reduction in such participation percentage and the OWNER determines that it would be to the OWNER'S advantage, the percentage of work required to be performed by the CONTRACTOR may be reduced; provided, written approval of such reduction is obtained by the CONTRACTOR from the OWNER.*

*CONTRACTOR'S forces shall be determined by Certified Payroll Reports that show that the personnel performing the claimed work are employees of the entity that was awarded the contract. The CONTRACTOR will be required to show that they pay employee taxes and benefits for the employees.*

*The organization of the Specifications into divisions, sections, and articles, and the arrangement and titles of project drawings shall not compel the CONTRACTOR into dividing the work among SUBCONTRACTORS or in establishing the extent of work to be performed by any trade.*

(Page 107-3. Add the following:)

**107.13.7.COD: WORK FORCE STATEMENT:** *All Bidders are required to submit a completed Work Force Statement (included in the Proposal book) with their bid. The Work Force Statement details the breakdown of employee statistics by race and sex.*

(Page 107-4. Add the following:)

**107.18.1.COD: CITY REGULATIONS ON STREET CLOSING:**

*The City Manager has designated the Public Works and Transportation Department as a coordinating agency for clearance of all street closing information. In order to avoid unwarranted inconveniences, and to prevent the isolation of any area due to the closing of streets, the following regulations will apply:*

- (1) **Street Work:** *No street work will be permitted (except in case of emergency) nor any equipment or material permitted to be stored or parked on any street in the Central Business District (CBD) between the hours of 7:00 a.m. - 9:00 a.m. or 3:30 p.m. - 6:00 p.m. See **Figure 101.1.COD: Central Business District** in the Definitions Section.*
- (2) **Streets Subject to Work Restrictions:** *All streets on the Prime Network will be subject to work restrictions during certain hours. These hours will be determined by Public Works and Transportation Department.*
- (3) **Street Closure Notification:** *If a street is required to be closed or partially closed on Saturday or Sunday, any legal City Holiday, or on weekdays between the hours of 5:00 p.m. and 8:00 a.m., the Public Works and Transportation dispatcher should be notified by a call to the City of Dallas Action Center by dialing 311, within the City Limits of the city of Dallas or (214) 670-5111 from any other location.*
- (4) **Maintain Traffic Control and Street Name Signs:** *Traffic control and street name signs shall not be torn down, covered, or otherwise removed from the clear view of the driver or pedestrian without prior approval of the City Traffic Engineer.*
- (5) **Street Closures To Be Coordinated with Traffic System Safety Coordinators:** *Street closure or partial closure will be coordinated with the Citywide Traffic System Safety Coordinators, Public Works, and Transportation Department, by dialing 311 within the City Limits of the city of Dallas or (214) 670-5111 from any other location during normal business hours (7:00 am to 5:00 pm).*
- (6) **Project Activities:** *The CONTRACTOR shall coordinate all project activities with the OWNER.*

(Page 107-5. Replace **Item 107.19.2. Protection of Persons and Property**, with the following: (Two new paragraphs have been added after the third paragraph.))

**107.19.2.COD: PROTECTION OF PERSONS AND PROPERTY:** The CONTRACTOR shall have the responsibility to provide and maintain all warning devices and take all precautionary measures required by law or otherwise to protect persons and property while said persons or property are approaching, leaving or within the work site or any area adjacent to said work site. Unless otherwise stated in the Contract, compensation shall not be paid to the CONTRACTOR for the installation or maintenance of any warning devices, barricades, lights, signs or any other precautionary measures required by law or otherwise for the protection of persons or property according to **Item 801.1. Barriers and Warning and/or Detour Signs.**

The CONTRACTOR shall assume all duties owed by the OWNER to the general public in connection with the general public's immediate approach to and travel through the work site and the area adjacent to said work site.

Where the work is carried on, in or adjacent to any street, alley, sidewalk, public right-of-way or public place, the CONTRACTOR shall at its own cost and expense provide such flagmen and watchmen in addition to its responsibility to furnish, erect and maintain such warning devices, barricades, lights, signs, and other precautionary measures for the protection of persons or property as are required by law. During periods when schools are in session, the CONTRACTOR will be required during the construction of the Work to:

- (1) *Maintain a suitable all-weather footpath across the Work at all designated school crosswalks and other access areas as required by the OWNER. Provide channeling fences to separate the work area from the footpath, if required by the OWNER. Provide signage as required to direct pedestrians around the work area.*
- (2) *Move and reinstall pedestrian crossing warning signs as construction and routing of traffic lanes require.*

*The CONTRACTOR is instructed to control his operations carefully when near public or private schools, particularly during the morning and afternoon drop-off and pick-up hours, to assure continuous safety of schoolchildren and adults.*

*The CONTRACTOR shall install water and wastewater mains and all other construction in such a way as to minimize disruption to school operations. The CONTRACTOR shall coordinate construction activities through the OWNER. The CONTRACTOR shall notify in writing all school principals and the appropriate Administrative Offices of the School District of primary and secondary schools located within 1000 feet of the project or project segment at least ten (10) working days prior to beginning construction. All work including paving operations and clean up shall be completed immediately after the water line is tested and approved. The CONTRACTOR shall work with sufficient personnel and equipment to minimize the disruption in the area.*

The CONTRACTOR'S responsibility for providing and maintaining flagmen, watchmen, warning devices, barricades, signs, and lights, and other precautionary measures shall not cease until directed in writing by the OWNER or until final payment, whichever occurs first. If the OWNER discovers that the CONTRACTOR has failed to comply with the applicable federal and state law by failing to furnish the necessary flagmen, warning devices, barricades, lights, signs or other precautionary measures for the protection of persons or property, the OWNER may order such additional precautionary measures as required by law to be taken to protect persons and property. The CONTRACTOR shall reimburse the OWNER for any expense incurred by the OWNER in taking any additional precautionary measures as a result of the CONTRACTOR'S failure to do so.

The CONTRACTOR will be held responsible for all damage to the work and other public or private property due to the failure of warning devices, barricades, signs, lights, or other precautionary measures in protecting said property, and whenever evidence is found of such damage, the OWNER may order the damaged portion immediately removed and replaced by and at the cost and expense of the CONTRACTOR.

Minimum standards for safeguarding pedestrian and vehicular traffic are contained in the latest edition of the Texas Manual of Uniform Traffic Control Devices (MUTCD), as amended, Texas Department of Transportation and the latest version of the City of Dallas' Traffic Barricade Manual. In cases of conflict, the City of Dallas' Traffic Barricade Manual will govern. Signage, barricades, and other traffic control devices for detouring and maintenance of traffic on this CONTRACT shall be as provided in above said manual and as directed by the OWNER. Unless otherwise specified in the CONTRACT, costs associated with the acquisition and removal of required traffic control devices shall be considered incidental to the Work.

(Page 107-6. Replace **Item 107.19.3.2. Regulations**, with the following: (new paragraphs have been added after the second paragraph.))

**ITEM 107.19.3.1.COD: REGULATIONS:** The CONTRACTOR shall be responsible for complying with state laws and federal regulations relating to trench safety, including those which may be enacted during the performance under this Contract. The CONTRACTOR is advised that Federal Regulations 29 C.F.R. 1926.650-1926.652 have been, in their most recent version as amended, in effect since January 2, 1990.

THE CONTRACTOR SHALL FULLY COMPLY WITH THE U. S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS PERTAINING TO EXCAVATIONS, TRENCHING, AND SHORING AND SHALL PROVIDE AND FAMILIARIZE ITS EMPLOYEES INVOLVED IN EXCAVATION AND TRENCHING WITH THE PROVISIONS IN OSHA PAMPHLET NUMBER 2226, EXCAVATING AND TRENCHING OPERATIONS.

The CONTRACTOR must submit a notarized affidavit to the OWNER prior to the award of the CONTRACT. The affidavit must be completed on the CONTRACTOR'S letterhead, must be signed by an Officer of the CONTRACTOR, and should be in the following form:

#### AFFIDAVIT

I certify \_\_\_\_\_ (Name) ("CONTRACTOR") is a competent person as defined in the Federal Register, Part II, 29 CFR 1926, Occupational Safety and Health Standards - Excavations; Final Rule, and it will perform the duties and responsibilities of this position on City of Dallas CONTRACT \_\_\_\_\_ (Number and Name).

#### **INDEMNIFICATION FOR TRENCH SAFETY**

CONTRACTOR AGREES TO DEFEND, INDEMNIFY AND HOLD OWNER, ITS OFFICERS, AGENTS AND EMPLOYEES, AND THE CONSULTING ENGINEER COMPLETELY HARMLESS FROM ANY CLAIMS, LAWSUITS, JUDGMENTS, COSTS AND EXPENSES (INCLUDING ATTORNEY'S FEES, IF ANY) FOR ANY PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM FOR WHICH RECOVERY OF DAMAGES IS SOUGHT (INCLUDING ANY INJURY, DEATH OR DAMAGE SUFFERED BY THE CONTRACTOR'S OWN EMPLOYEES) ARISING OUT OF OR OCCASIONED BY THE USE OF ANY TRENCH EXCAVATION PLANS, REGARDLESS OF THEIR ORIGIN, OR BY ANY NEGLIGENT, GROSSLY NEGLIGENT, STRICTLY LIABLE OR INTENTIONAL ACT OF THE CONTRACTOR, A SUBCONTRACTOR OR ANY INDIVIDUAL EMPLOYEE OR LABORER (WHETHER OR NOT AN EMPLOYEE OF THE CONTRACTOR OR A SUBCONTRACTOR) IN THE PERFORMANCE OR SUPERVISION OF ACTUAL TRENCH EXCAVATION UNDER THE CONTRACT. **THIS INDEMNITY APPLIES REGARDLESS OF WHETHER OWNER'S OR CONSULTING ENGINEER'S NEGLIGENCE OR FAULT IN THE ADMINISTRATION OF THIS CONTRACT OR IN THE PREPARATION, REVIEW OR APPROVAL OF THE CONTRACTOR'S TRENCH EXCAVATION PLAN CONTRIBUTED TO THE INJURY, DEATH, OR DAMAGE. OWNER ACCEPTS NO LIABILITY WHATSOEVER AS A RESULT OF THE PREPARATION, REVIEW OR APPROVAL OF ANY TRENCH EXCAVATION PLAN UNDER THIS CONTRACT; OWNER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE ADEQUACY OR CORRECTNESS OF ANY EXCAVATION PLAN.** THE PROVISIONS OF THIS PARAGRAPH ARE SOLELY FOR THE BENEFIT OF THE

**PARTIES TO THE CONTRACT AND ARE NOT INTENDED TO CREATE OR GRANT ANY RIGHTS, CONTRACTUAL OR OTHERWISE, TO ANY OTHER PERSON OR ENTITY. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO WAIVE ANY GOVERNMENTAL IMMUNITY OF THE OWNER. THIS PARAGRAPH CONTROLS IN THE EVENT OF A CONFLICT WITH ANY OTHER INDEMNITY OR OWNER-WARRANTY PROVISION IN THE SPECIFICATIONS.**

(Page 107-6. Replace **Item 107.19.3.3. Trench Safety Plan**, with the following: (Several additional paragraphs have been added after the original first paragraph.)

**107.19.3.3.COD: TRENCH SAFETY PLAN:** *The CONTRACTOR shall prepare a trench safety plan in accordance with the Occupational Safety and Health Administration Standards 1926.652 "Requirements for Protective Systems." In cases where trench excavation is 20 feet in depth or greater, or where conditions require, the CONTRACTOR shall be responsible for providing to the OWNER an acceptable trench safety plan signed and sealed by a Professional Engineer qualified to do such work and licensed/registered in the State of Texas. The CONTRACTOR shall be responsible for selecting an appropriate method of providing trench safety after due consideration of the job conditions, location of utilities, pavement conditions and other relevant factors. Slope-back methods, which may result in unnecessary displacement of utilities and/or destruction of pavement, shall not be used without permission from the OWNER. Plans for devices used to provide trench safety such as trench shields and shoring systems will be likewise certified by a Professional Engineer licensed/registered in the State of Texas or by a Professional Engineer licensed/registered in the state of manufacture of the shield or shoring system. Shoring System components to be utilized on the project must have current (within one year) certification of structural adequacy. Measurement and payment shall be as specified in the CONTRACT.*

*The CONTRACTOR shall install a trench safety system in accordance with Occupational Safety and Health Administration Standards 1926.652 "Requirements for Protective Systems." This shall be paid under the appropriate bid item.*

**107.19.3.3.1.COD: OSHA AND PIPE DESIGN:** *The OSHA regulations contain two requirements that may affect the pipe design:*

- (1) *For Type C soils and Type B soils, except cohesive soils, and the ditch sloping option is selected, the sloping must begin at the bottom of the trench and,*
- (2) *Excavation of material to a level no greater than 2 feet below the bottom of the members of a support system shall be permitted. The embedment to support a pipe is calculated on a vertical wall to a point 1 foot above the top of the pipe at a maximum trench width, as shown in the latest DWU Standard Drawings for Water and Wastewater Construction, Sheet 112. If the maximum allowable trench width at a point 1 foot above the top of the pipe is exceeded, the pipe design must be evaluated by the OWNER. Any additional costs associated with a design change, such as a change in embedment or change in pipe class, etc., shall be at no cost to the City. In all cases, the basis of payment items governed by the trench width Bd will be as shown in the applicable tables and latest City of Dallas Standard Drawings.*

**107.19.3.3.2.COD: DAILY INSPECTIONS:** *The regulation requires that a competent person make a daily inspection of the excavation prior to start of work and as needed throughout the shift (1926.650 (k)).*

*The regulation also states "In order to be a 'competent person' for the purposes of this standard one must have had specific training in, and be knowledgeable about, soil analysis, the use of protective systems, and the requirements of this standard."*

**107.19.3.3.3.COD: CURRENT SAFETY PROGRAM:** *Depending on the contracting agency, the CONTRACTOR must have on file with the City of Dallas Water Utilities Department or the City of Dallas Public Works and Transportation Department, a Safety Program. No work may be started unless a Safety Program has been submitted and approved. The Safety Program is valid on all contracts for a two-year period.*

The safety program must be type written, signed by an officer of the company and include:

- (1) *Safety checklist.*
- (2) *Methods of construction in the vicinity of existing underground utilities.*
- (3) *Type of safety equipment required.*
- (4) *Supervisor's degree of responsibility and authority.*
- (5) *Employee training required.*
- (6) *Safety sessions.*
- (7) *Notification and investigation of accidents.*
- (8) *Safety Officer with qualifications.*
- (9) *Individual equipment, i.e. safety shoes, glasses, hardhats.*

No claims for delay or extension of time will be accepted due to CONTRACTOR'S failure to meet these provisions.

THE SAFETY PROGRAM SHALL BE DELIVERED TO:

Dallas Water Utilities Contracts:

**Project Manager  
Capital Improvement Program  
2121 Main St., Suite 300  
Dallas, Texas 75201**

Public Works and Transportation Contracts:

**Public Works and Transportation  
Construction Management  
320 E. Jefferson, Room 312  
Dallas, Texas 75203**

(Page 107-6. Add the following:)

**107.19.3.3.4.COD: NEIGHBORHOOD MEETING:** *If requested by the OWNER, the CONTRACTOR will be required to attend any scheduled neighborhood meeting(s). The CONTRACTOR may be asked to speak on the method of construction and answer questions from attendees.*

(Page 107-7. Replace **Item 107.19.3.4. Shoring and Sheeting**, with the following:)

**107.19.3.4.COD: SHORING AND SHEETING:** *The sides of all excavation shall be supported in accordance with the trench safety plan. Where bracing or sheeting and shoring are used, the trench width shall be increased accordingly, shall be considered as incidental work, and shall not be paid for as a separate item. All sheeting, shoring, and bracing shall have sufficient strength and rigidity to withstand the pressure exerted, to maintain the sides of the excavation properly in place, and to protect all persons or property from injury or damage. When excavations are made adjacent to existing buildings or other structures or in paved streets, particular care shall be taken to adequately sheet, shore, and brace the sides of the excavation to prevent undermining of or settlement beneath the structures or pavement. Underpinning of adjacent structures or pavement shall be done at the CONTRACTOR'S own cost and expense and in a manner satisfactory to the OWNER, or, when required by the OWNER, the pavement shall be removed, the void(s) satisfactorily filled, compacted, and the pavement replaced by the CONTRACTOR. The entire expense of such removal and subsequent replacement thereof shall be borne by the CONTRACTOR. Wooden sheeting, shoring, and bracing shall be left in place where it is adjacent to the pipe embedment for the initial lift of backfill, if directed by the OWNER.*

*The removal of all sheeting, shoring, and bracing shall be done in such manner as not to endanger or damage either new or existing structure, or private or public properties, and so as to avoid cave-ins or sliding of the banks. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and completely filled and compacted with suitable materials. If, for any reason, the CONTRACTOR, with the approval of the OWNER, elects to leave in place the sheeting, shoring or bracing, no payment shall be allowed for such material left in place.*

(Page 107-7. Add the following:)

**107.19.3.7.COD: SUSPENSION OF WORK:** *The OWNER has the authority to suspend all work immediately if, in the OWNER's opinion, there is imminent danger to workers or the general public. If there is no imminent danger to workmen or the general public, but trench conditions are not in compliance with Federal Regulations 29 C.F.R. 1926.650-1926.652, the OWNER shall warn the CONTRACTOR who shall then immediately order all workmen in and adjacent to the trench away from the area. The CONTRACTOR must then bring the trench into compliance with the regulations. If the CONTRACTOR does not make the required corrections, all work on the CONTRACT shall cease and the OWNER will issue a letter of Temporary Suspension of Work. The only work authorized after issuance of this letter is work approved by the regulations. Other work shall not be permitted until the OWNER issues a letter of Release of Temporary Suspension of Work.*

*The CONTRACTOR shall not be entitled to additional compensation, an extension of time or payment of damages as a result of a temporary suspension of work under this provision.*

(Page 107-7. Replace **Item 107.20. Project Signs** with the following:)

**107.20.COD: PROJECT SIGNS:** *Project Signs shall be furnished by the OWNER. The CONTRACTOR shall pick-up, erect, and maintain the signs in acceptable condition for the duration of the project. Signs shall be placed at locations selected by the OWNER and moved as required during the construction. Project Signs shall be removed*

and returned by the CONTRACTOR, as directed by the OWNER, upon completion of the project. No separate payment shall be made for the Project Signs and this work will be considered subsidiary to other pay items.

(Page 107-8: Add the following Item):

**107.23.2.1.COD: SOIL BORINGS:** *Soil Borings are to be used for information only and are not warranted accurate in any way. The OWNER accepts no responsibility for any deviation from or variance in soil types and/or depths shown on the borings.*

(Page 107-9. Add the following: new information; the information presented herein is subject to change without notice.)

**107.23.5.COD: CITY OF DALLAS CONTACTS:**

*During construction, the following companies should be contacted in order to determine the location of their respective underground utilities:*

- ACTION CENTER** (City of Dallas services: water, wastewater and storm water  
– All NON-EMERGENCY)..... 311
- Action Center (From outside of Dallas City Limits)..... (214) 670-5111
- ALL EMERGENCIES** ..... 911
- DIG TESS** (Texas Excavation Safety System)
- Locate Underground Utilities CALL 2 DAYS IN ADVANCE ..... (800) DIG-TESS
- (24 Hours, 7 days) ..... (800) 344-8377

*The above list is not exhaustive. Refer to contract documents and other sources for additional contact numbers. The CONTRACTOR is responsible for notifying all companies who may have an interest or maintain facilities throughout a project.*

(Page 107-9. Add the following:)

**107.24.1.COD: TRASH AND DEBRIS REMOVAL:** The CONTRACTOR shall maintain the construction site in a neat and orderly manner at all times and remove trash, paper, rubbish, and debris resulting from CONTRACTOR operations or that of his employees during the construction of this project on a daily basis.

The CONTRACTOR, prior to utilizing any private property, shall provide a written agreement between the CONTRACTOR and the Property OWNER to the Project Manager or Construction Superintendent. The agreement shall state what uses are allowed for the property, the length of time the CONTRACTOR is allowed to use it and the final condition the property shall be returned to once all work is completed. CONTRACTOR shall provide a written release from the Property OWNER once the area has been restored.

(Page 107-10. Add the following:)

**107.25.1.COD: SPOIL REMOVAL:** *The CONTRACTOR will be required to remove spoil from the job site in a timely manner. If, in the opinion of the OWNER, the spoil is not being removed as required, the CONTRACTOR will be directed to remove the spoil. The CONTRACTOR must comply with this directive within 24 hours. There will be no additional compensation to the CONTRACTOR for removing this spoil at a time other than as planned.*

*CONTRACTOR shall comply with all requirements and regulations for any spoil removed from the project.*

(Page 107-10. Replace **Item 107.26. Restoration of Property**, with the following; (There is a new sentence after the first sentence in **Item 107.26 Restoration of Property**. Additionally, there is a new last paragraph)

**107.26.COD: RESTORATION OF PROPERTY:**

When and where any damage or injury is done to public or private property on the part of the CONTRACTOR, the public or private property shall be restored at the CONTRACTOR'S own cost and expense to a condition equal (or improved) to that existing before such damage was done by repairing, rebuilding or otherwise restoring as may be directed, or it shall make good such damage or injury in a manner acceptable to the Property OWNER or the OWNER. *The CONTRACTOR must furnish to the OWNER a release signed by the Property OWNER. Replacement of previously constructed items, such as curb, gutter, sidewalks, driveways, paving, etc., shall conform to the specifications for new construction, unless directed otherwise by the OWNER.* In case of failure on the part of the CONTRACTOR to restore such property or make good such damage or injury, the OWNER may, upon 48 hours' written notice, under ordinary circumstances, and without notice when a nuisance or hazardous condition results, proceed to repair, rebuild or otherwise restore such property as may be determined necessary, and the cost thereof shall be deducted from any monies due or to become due the CONTRACTOR under its CONTRACT; or where

sufficient CONTRACT funds are unavailable for this purpose, the CONTRACTOR or its surety shall reimburse the OWNER for all such costs.

*In accordance with Chapter 30-2(h) of the Revised Code of Civil and Criminal Ordinances of the City of Dallas, Texas: "the erection, including excavation, demolition, alteration or repair of any building in or adjacent to a residential area other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays is prohibited, excepted in the case of urgent necessity in the interest of public safety, for which a permit shall be obtained from the OWNER,*

(Page 107-10. Add the following:)

**107.26.1.COD: PAVEMENT MARKING RESTORATION:** *All disturbed pavement markings, including striping, traffic buttons, crosswalks, etc., shall be restored to same or improved condition as per **Item 804.2 Painting and Pavement Marking**, of these specs, City of Dallas Specifications for Public Works Construction, Standard Construction Details and all addenda thereto.*

(Page 107-10. Add the following:)

**107.26.2.COD: FENCE RELOCATION AND REPLACEMENT:** *Bid Items for Fencing are Contingent Items setup to handle the relocation and/or replacement of various kinds of private property fences that are found to be in conflict with the construction work. The CONTRACTOR shall inspect each construction location with the OWNER's representative and together agree as to what fences, if any, are in conflict with the construction and need to be relocated and/or replaced. The CONTRACTOR shall then contact the affected Property OWNER(s) and make the necessary arrangements for any temporary fencing and security. Any agreements between the Property OWNER(s) and CONTRACTOR are the sole responsibility of the CONTRACTOR. This does not include fences damaged during construction operations that were originally found not to be in conflict with construction. Repairs or replacement of fencing items damaged by the CONTRACTOR, shall be performed at no additional cost to the OWNER, unless a bid item has been provided in the CONTRACT.*

(Page 107-10. Add the following:)

**107.26.3.COD: REPLACEMENTS OF SIDEWALKS, CURBS, AND/OR GUTTERS:** *At the OWNER's direction, the CONTRACTOR may be required to remove and install concrete sidewalks, curbs, and/or gutters outside the established pavement limits as specified under the associated bid items. The CONTRACTOR will be paid for additional quantities installed at the unit prices established for the appropriate bid items. This does not include any items damaged by the CONTRACTOR, which shall be replaced at no additional cost to the OWNER.*

(Page 107-10. Add the following:)

**107.26.4.COD: DAMAGED PAVING:** *Paving restoration and all associated costs outside of the required Excavation areas shall be the sole responsibility of the CONTRACTOR and no separate payment will be made.*

(Page 107-10. Add the following:)

**107.26.5.COD: SITE RESTORATION:** *The CONTRACTOR shall restore the construction site to an acceptable condition, or better, immediately upon installation and the original condition, or better, immediately upon acceptance of City of Dallas owned underground utilities, as directed by the OWNER. No payment will be made for restoration of pavement, vegetation or other improvements that are outside of the established construction limits.*

(Page 107-10. Add the following:)

**107.27.COD: ENVIRONMENTAL COMPLIANCE:**

- (1) *The OWNER has developed an Environmental Management System ("EMS"), based upon International Standards Organization (ISO) Standard 14001. As part of the EMS, the OWNER has adopted an environmental policy. The CONTRACTOR acknowledges receipt of the environmental policy as a part of the bid documents and shall adhere to the policy and provide information requested by the OWNER prior to any work being done on the site.*
- (2) *The CONTRACTOR and its SUBCONTRACTORS are deemed to have made themselves familiar with and at all times shall comply with any and all applicable federal, state or local laws, rules, regulations, ordinances, and rules of common law now in effect (including any amendments now in effect), relating to the environment, Hazardous Substances or exposure to Hazardous Substances, including but not limited to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C.A. §§ 9601, et seq.; the Hazardous Materials Transportation Act, 49 U.S.C.A. §§ 1801, et seq.; the Resource Conservation and Recovery Act of 1976, 42 U.S.C.A. §§ 6901, et seq.; the Federal Water Pollution Control Act, 33*

U.S.C.A §§ 1201, et seq.; the Clean Water Act, 33 U.S.C. § 1251, et seq., the Toxic Substances Control Act, 15 U.S.C.A. §§ 2601, et seq.; the Clean Air Act, 42 U.S.C.A. §§ 7401, et seq.; the Safe Drinking Water Act, 42 U.S.C.A. §§ 3808, et seq., and the latest judicial or administrative interpretation of these laws, rules, regulations, ordinances, or rules of common law, including but not limited to any judicial or administrative order, consent decree, or judgment affecting the Project.

- (3) In the event the CONTRACTOR encounters on the site materials reasonably believed to be a Hazardous Substance that have not been rendered harmless, and removal of such materials is not a part of the scope of work required under the contract documents, the CONTRACTOR shall immediately stop work in the affected area and report in writing the facts of such encounter to the OWNER. Work in the affected area shall not thereafter be resumed except by written order of the OWNER unless and until the material is determined not to be a Hazardous Substance or the Hazardous Substance is remediated. The OWNER may choose to remediate the Hazardous Substance with a separate contractor or through a Change Order with the CONTRACTOR. If the OWNER determines that the Hazardous Substance exists in the affected area due to the fault or negligence of the CONTRACTOR or any of its SUBCONTRACTORS, the CONTRACTOR shall be responsible for remediating the condition at the sole expense of the CONTRACTOR in accordance with the CONTRACTOR'S Spill Prevention and Response Plan. **AN EXTENSION OF WORKING TIME FOR ANY DELAY IN THE PROGRESS SCHEDULE CAUSED AS A RESULT OF THE DISCOVERY AND REMEDIATION OF A HAZARDOUS SUBSTANCE MAY BE GRANTED BY THE OWNER ONLY IF ALL REMAINING WORK ON THE PROJECT MUST BE SUSPENDED AND THE DELAY CANNOT BE MADE UP ELSEWHERE IN THE PROGRESS SCHEDULE. ANY CLAIM OR REQUEST FOR AN EXTENSION OF WORKING TIME BY THE CONTRACTOR IN CONNECTION WITH THE DISCOVERY AND REMEDIATION OF A HAZARDOUS SUBSTANCE IS SUBJECT TO THE PROVISIONS OF NCTCOG ITEMS.**
- (4) The CONTRACTOR shall be responsible for identification, abatement, cleanup, control, removal, remediation, and disposal of any Hazardous Substance brought into or upon the site by the CONTRACTOR or any SUBCONTRACTOR or SUPPLIER. The CONTRACTOR shall obtain any and all permits necessary for the legal and proper handling, transportation, and disposal of the Hazardous Substance and shall, prior to undertaking any abatement, cleanup, control, removal, remediation, and disposal, notify the OWNER and the Consulting Engineer so that they may observe the activities; provided, however, that it shall be the CONTRACTOR'S sole responsibility to comply with all applicable laws, rules, regulations, or ordinances governing the activities.
- (5) **Spill Prevention Plan:** At least seventy-two (72) hours prior to commencing performance of any of the work at the Project site, the CONTRACTOR shall submit to the OWNER for review and approval a Spill Prevention and Response Plan ("SPRP") meeting the requirements of federal and state law, rules, and regulations. The SPRP shall be specially designed for the CONTRACTOR'S planned work methods and procedures. The SPRP shall be designed to complement all applicable safety standards, fire prevention regulations, and pollution prevention policies and procedures. The SPRP shall include estimates of the quantity and rate of flow should equipment fail, and detail containment or diversionary structures to prevent spills from leaving the site or migrating into adjacent properties or navigable waters. The SPRP shall include methods of recovery of spilled materials and all applicable twenty-four (24) hour emergency phone numbers, including without limitation that of the OWNER. The CONTRACTOR shall not commence any fieldwork prior to approval of such plan by the OWNER. The following additional rules shall apply with respect to spills caused by the CONTRACTOR or a SUBCONTRACTOR:
- The CONTRACTOR shall immediately report any spill or release at the Project site, whether or not it is associated with this CONTRACT, to the OWNER or other designated representative. Thereafter, within two (2) working days after the occurrence of such event, the CONTRACTOR shall submit a written report describing such event in a degree of detail reasonably acceptable to the OWNER.
  - The CONTRACTOR shall immediately respond in accordance with the SPRP in the event of a spill.
  - The CONTRACTOR shall dispose of spilled materials in accordance with EPA and Texas Commission on Environmental Quality (TCEQ) regulations and any other applicable federal, state, or local laws, rules, or regulations. In connection with such disposals, the CONTRACTOR shall use only those transporters and disposal facilities that are approved in advance in writing by the OWNER. A copy of all transport manifests for the spilled materials shall be obtained and retained in the CONTRACTOR'S records for reference purposes, to be provided upon request of the OWNER or any governmental regulatory agency with jurisdiction over the matter. **All costs of collection, containment, and disposal of spilled materials shall be the sole responsibility of the CONTRACTOR.**
  - The term "spill" includes any kind of environmental discharge or release.
- (6) **Clean Air Management Plan:** The CONTRACTOR shall comply with the Clean Air Management Plan submitted to and approved by the OWNER during the contractor selection process. The OWNER reserves the right, at the CONTRACTOR'S sole expense, to require the removal or retrofitting of any equipment used in the course of construction that does not comply with the Plan submitted to and approved by the OWNER.

- (7) The CONTRACTOR shall deposit surplus or waste excavation or other materials removed as part of the work at a legal disposal site in accordance with all applicable state, federal, and local laws, rules, regulations, and ordinances. The CONTRACTOR shall submit to the OWNER for review and approval all planned disposal sites or proposed uses for the surplus or waste excavation or other materials prior to removal of any excavation or other material from the Project site. A copy of all transport manifests for surplus or waste excavation or other materials shall be obtained and retained in the CONTRACTOR'S records for reference purposes, to be provided upon request to the OWNER or any governmental regulatory agency with jurisdiction over the matter.
- (8) The CONTRACTOR is responsible for obtaining coverage under the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit from TCEQ for construction of the Project under regulations contained in 40 CFR Part 122, as amended, pursuant to the Clean Water Act, 33 U.S.C.A. §§1251 et seq. and Chapter 26 of the Texas Administrative Code. These regulations require the filing of a Notice of Intent (NOI) to obtain and abide by the general storm water permit for construction activities promulgated by EPA as administered by the TCEQ, including but not limited to demolition, clearing, grading, embankment, and excavation that disturb the applicable amount of total land area. In addition, the CONTRACTOR shall comply with all regulations of the OWNER relating to storm water and storm water runoff management at the Project site pursuant to Chapter 19, Article IX, Dallas City Code, as amended.
- (9) **Storm Water Pollution Prevention Plan:** The CONTRACTOR shall provide a Storm Water Pollution Prevention Plan in accordance with the requirements of the TPDES General Construction Permit, and Section 201.3.1.COD of these Specifications.
- (10) **Special Requirements for Work within the Floodway and Levee Access Gates of the Trinity River:** All construction located within the defined Floodway and Levee of the Trinity River will require submittal of a signed acknowledgement of the City's Environmental Policy, and obtaining and adhering to the requirements of the Floodway Access Permit, as administered by the City of Dallas Trinity Watershed District Requirements for obtaining the Floodway Access Permit include, but are not limited to:
- (a) Copy of Project Authorization by the United States Army Corps of Engineers or OWNER.
  - (b) General Description of Work.
  - (c) Complete List of Vehicles, equipped with Spill Kits that will be onsite.
  - (d) Emergency Contact Information for CONTRACTOR and any applicable SUBCONTRACTORS.
  - (e) Emergency Contact information as to who's governing CONTRACTOR(s), (i.e., State, DART, TXDOT).
  - (f) Copies of Material Safety Data Sheets (MSDS) of all hazardous and non-hazardous chemicals on site(s) and available when requested.
  - (g) If the CONTRACTOR is not anticipated to be present onsite, then separate permitting may be required for the SUBCONTRACTORS.
  - (h) Copy of the latest Spill Prevention and Counter Measure Plan (SPCC). See definition in **Item 101.1.COD: Definitions**.
  - (i) Copy of the current Storm Water Pollution Plan (SWPPP). See definition in **Item 101.1.COD: Definitions**.

The Floodway and Levee Access Permit has additional requirements for work within the Floodway of the Trinity River. Permit Submittals are to be made in person, between the hours of 8 am to 11am and 1 pm to 4 pm at the

**Offices of the City of Dallas  
Flood Control District  
2255 Irving Boulevard  
Dallas, Texas 75207**

- (11) The CONTRACTOR shall not install any materials in the performance of the work that contain asbestos or asbestos-related material such as hydrated mineral silicate, including chrysolite, amosite, crocidolite, tremolite, anthophyllite or actinolite, whether friable or non-friable.
- (12) The OWNER reserves the right in its sole option to exercise the following remedies (without waiving the right to pursue the imposition of any civil or criminal fines or penalties that may be imposed under state, federal, or local laws or ordinances), at no additional cost to the OWNER and without an extension of time, in the event the CONTRACTOR fails or refuses after seven (7) days advance written notice from the OWNER to comply with the provisions of this Paragraph 10.10, the terms of the SPRP, the terms of the Clean Air Management Plan, any storm water permit or other environmental permit issued in connection with the work, or any applicable environmental law, rule, regulation, or ordinance:

- (a) *suspend all or any portion of the work until the noncompliance is corrected, or until a detailed plan to achieve compliance within a reasonably prompt period of time is prepared by the CONTRACTOR and approved by the OWNER;*
  - (b) *if the CONTRACTOR fails to properly address the noncompliance within the time stipulated by the OWNER, perform the necessary remediation or correction work and backcharge the CONTRACTOR for the cost of the remediation or correction; or*
  - (c) *terminate the CONTRACT for default as provided in the General Conditions and the Addendum.*
- (13) *For purposes of this Item, the term "Hazardous Substance" is defined to include the following:*
- (a) *any asbestos or any material which contains any hydrated mineral silicate, including chrysolite, amosite, crocidolite, tremolite, anthophyllite, or actinolite, whether friable or non-friable;*
  - (b) *any polychlorinated biphenyls ("PCBs"), or PCB-containing materials, or fluids;*
  - (c) *radon; any other hazardous, radioactive, toxic, or noxious substance, material, pollutant, or solid, liquid or gaseous waste;*
  - (d) *any pollutant or contaminant (including but not limited to petroleum, petroleum hydrocarbons, petroleum products, crude oil or any fractions thereof, any oil or gas exploration or production waste, any natural gas, synthetic gas or any mixture thereof, lead, or other toxic metals) which in its condition, concentration or area of release could have a significant effect on human health, the environment, or natural resources;*
  - (e) *any substance that, whether by its nature or its use, is subject to regulation or requires environmental investigation, monitoring, or remediation under any federal, state, or local environmental laws, rules, or regulations;*
  - (f) *any underground storage tanks, as defined in 42 U.S.C. Section 6991(1)(A)(I) (including those defined by Section 9001(1) of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq.; the Texas Water Code Annotated Section 26.344; and Title 30 of the Texas Administrative Code Sections 334.3 and 334.4), whether empty, filled or partially filled with any substance; and*
  - (g) *any other hazardous material, hazardous waste, hazardous substance, solid waste, and toxic substance as those or similar terms are defined under any federal, state, or local environmental laws, rules, or regulations.*

(Page 107-10. Add the following:)

**107.28.COD: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, CHAPTER 217 COMPLIANCE:**

*CONTRACTOR to comply with Texas Commission on Environmental Quality (TCEQ) Chapter 217, 217.54 criteria for laying pipe, and the latest DWU Standard Drawings for Water and Wastewater Construction. See Technical Specifications.*

## ITEM 108.COD: PROSECUTION AND PROGRESS

(Page 108-1. Replace **Item 108.1. Progress Schedule**, with the following:)

**108.1.COD: CONSTRUCTION SCHEDULE:** *The CONTRACTOR must submit to the OWNER a detailed Construction Schedule outlining the major items of work on the project. This schedule must be approved as to form by the OWNER prior to CONTRACTOR starting work on the project. The schedule must be updated on a monthly basis. The OWNER has the authority to stop work on the project if the CONTRACTOR fails to provide an updated schedule as requested. The OWNER shall not be responsible for any delay as a result of the CONTRACTOR'S failure to submit the schedule in a timely manner.*

(Page 108-2. Replace **Item 108.5: SUBCONTRACTS** with the following. Several new paragraphs have been added)

### **108.5.COD: SUBCONTRACTS:**

The CONTRACTOR shall not make any subcontract for performing any portion of the work included in the CONTRACT without written notice to the OWNER. This CONTRACT having been made pursuant to the bid submitted by the CONTRACTOR and in reliance with the CONTRACTOR'S personal qualifications and responsibility, the OWNER reserves the right to withhold approval of any SUBCONTRACTOR, which the OWNER may deem would not be in the OWNER'S best interest.

*The CONTRACTOR shall, as soon as practicable after signing the CONTRACT, submit a separate written notice to the OWNER identifying each proposed SUBCONTRACTOR. Upon request of the OWNER, the CONTRACTOR shall promptly furnish additional information tending to establish that any proposed SUBCONTRACTOR has the necessary facilities, skill, integrity, past experience and financial resources to perform the work in accordance with the terms and conditions of this CONTRACT.*

**108.5.1.COD: APPROVAL OF SUBCONTRACTOR:** *The CONTRACTOR must submit, with the request for approval of a SUBCONTRACTOR, the location, within the Dallas - Ft. Worth Metroplex area, of at least three contracts where the SUBCONTRACTOR has performed construction similar to the construction outlined in the CONTRACT. If required by the OWNER, the SUBCONTRACTOR'S representative will accompany the OWNER'S representative on examination of the referenced work. The CONTRACTOR must also submit to the OWNER a revised City of Dallas Schedule of Work and SUBCONTRACTOR/SUPPLIER Payment form anytime there is a change in the SUBCONTRACTOR/SUPPLIER participation on the CONTRACT.*

*If an M/WBE SUBCONTRACTOR is listed on the Schedule of M/WBE Participation, the CONTRACTOR must verify monthly that the listed M/WBE was used, estimate the value of that work, and estimate the percent of the total contract amount this work represents.*

*If, during the course of work, the M/WBE participation levels change, the CONTRACTOR shall provide written evidence of the participation changes to the OWNER at the address shown below. If the M/WBE participation levels change, the levels must remain above the minimum levels stated in the contract.*

*When the work is complete, the CONTRACTOR must furnish proof to the OWNER that the M/WBE was used, the amount paid to the M/WBE, and the percent of the total contract amount this work represents. If the percent paid is less than that shown on the Schedule of M/WBE Participation, the CONTRACTOR must also furnish a statement explaining the variance. The Final Estimate will not be processed until this information is received.*

Submittals shall be furnished to :

**Business Development and Procurement Services  
Dallas City Hall  
Room 3F North  
1500 Marilla Street  
Dallas, Texas 75201  
(214) 670-3326**

**108.5.2.COD: SUBCONTRACTOR REPLACEMENT:** If the OWNER determines that any proposed SUBCONTRACTOR is unacceptable, it shall so notify the CONTRACTOR, who may thereupon submit another proposed SUBCONTRACTOR unless the CONTRACTOR decides to do the work itself. Disapproval by the OWNER of any proposed SUBCONTRACTOR shall not provide a basis for any time extension claim or additional compensation of any nature, including but not limited to anticipated profit, overhead, or delay, by the CONTRACTOR.

If an approved SUBCONTRACTOR fails to perform properly the work undertaken, it shall be removed from the job upon request of the OWNER, following notification to the CONTRACTOR in writing of the request for removal and the reasons therefore.

Each subcontract entered into shall provide that the provisions of this CONTRACT shall apply to all SUBCONTRACTORS and their officers and employees in all respects as if they were employees of the CONTRACTOR. The OWNER'S decision not to disapprove of any subcontract shall not relieve the CONTRACTOR of any of its responsibilities, duties, and liabilities hereunder. The CONTRACTOR shall be solely responsible for the acts, omissions, negligence, or defaults of its SUBCONTRACTORS and of such SUBCONTRACTOR'S officers, agents and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the CONTRACTOR to the extent of its subcontract.

The CONTRACTOR agrees to bind each SUBCONTRACTOR and each SUBCONTRACTOR agrees to be bound by the terms of the CONTRACT documents insofar as applicable to its respective work. The CONTRACTOR and each SUBCONTRACTOR jointly and severally agree that nothing in the CONTRACT documents or otherwise shall create or be deemed to create any rights in favor of a SUBCONTRACTOR against the OWNER; nor shall be deemed or construed to impose upon the OWNER any obligation, liability or duty to a SUBCONTRACTOR; or to create any contractual relation whatsoever between a SUBCONTRACTOR and the OWNER.

The provisions contained herein shall likewise apply to any sub-subcontracts.

(Page 108-2. Add the following::)

**108.5.3.COD: SUBCONTRACTUAL RELATIONS:** *The CONTRACTOR is solely responsible for making payments properly to his SUBCONTRACTORS and SUPPLIERS on the Project. During construction of the Project, the CONTRACTOR shall submit each month a CONTRACTOR'S Report of SUBCONTRACTOR/SUPPLIER Payment (the "Report"). Every firm that was shown on the latest City of Dallas Schedule of Work and SUBCONTRACTOR/SUPPLIER Payment for this CONTRACT must be shown on the Report, even if a firm has not performed any work or service on the CONTRACT during the estimate or invoice period in question.*

*The Report shall show all payments made to date by the CONTRACTOR (plus existing retainage) to each SUBCONTRACTOR and SUPPLIER involved in the Project. The Report shall be made on a form approved and supplied by the OWNER. As an alternative to the Report, the CONTRACTOR may furnish Affidavits of Payment Received, which affidavits shall be executed by each SUBCONTRACTOR and SUPPLIER owed money and paid during the previous progress payment period for work or materials furnished on the Project. If, for any reason, the CONTRACTOR is withholding payment to a SUBCONTRACTOR or SUPPLIER due to a dispute or other problem with performance, the CONTRACTOR shall note on the Report form the amount withheld and that payment is in dispute. The OWNER may require the CONTRACTOR to document and verify the dispute or other problem in question. Receipt by the OWNER of the Report or Affidavits of Payment Received shall be a condition precedent to payment on any invoice or estimate. The OWNER reserves the right in its sole discretion, pursuant to **Item 109.4. Payment Withheld**, of the latest City of Dallas Addendum to the Standard Specifications, to withhold payment to the CONTRACTOR should it appear from the Report or other information furnished to the OWNER that:*

- (1) the Report has not been properly completed;
- (2) the CONTRACTOR has knowingly provided false information regarding payment or nonpayment of any SUBCONTRACTOR or SUPPLIER; or
- (3) the CONTRACTOR has otherwise failed to make payment properly to any SUBCONTRACTOR or SUPPLIER.

*The CONTRACTOR shall not have any claim for delay or additional compensation as a result of the OWNER's enforcement of this **Item 108.5.1.COD: Approval of SUBCONTRACTOR**. This **Item 108.5.1.COD: Approval of SUBCONTRACTOR**, shall not be construed to create a contractual relationship, expressed or implied, between any SUBCONTRACTOR and the OWNER.*

*The CONTRACTOR shall evaluate each SUBCONTRACTOR and SUPPLIER. The evaluation(s) will be furnished to the OWNER prior to payment of the final estimate.*

(Page 108-2. Add the following:)

**108.5.4.COD: CONTRACTOR ASSIGNS CLAIMS:** *When submitting a bid proposal, the CONTRACTOR thereby assigns to the City any and all claims for overcharges associated with this contract or any subcontracts directly or indirectly related to the work, which overcharges may arise under the Anti-Trust Laws of the United States, 15 U.S.C.A., Section 1, et seq (1973).*

*The CONTRACTOR shall include in all his subcontracts a clause that requires his SUBCONTRACTORS to assign to the City all claims for overcharges on purchases and supplies, which may arise under the Anti-Trust Laws of the United States, 15 U.S.C.A., Section 1 et seq (1973).*

The CONTRACTOR shall require his SUBCONTRACTORS to execute a notarized assignment on or before the date of the City's approval of the respective SUBCONTRACTORS for the work, which assignment shall become a part of the prime contract and made a part hereof for all purposes.

(Page 108-2. Add the following to the end of **Item 108.5 Subcontracts**.)

**108.5.5.COD: SUBCONTRACTOR MONTHLY PAYMENTS:** The CONTRACTOR is to submit to the OWNER a Statement of Payment to SUBCONTRACTORS prior to the payment of any estimate. The CONTRACTOR shall submit this information in the format or form provided in the CONTRACT Documents, or as directed by the OWNER.

(Page 108-2. Add the following to the end of **Item 108.5 Subcontracts**.)

**108.5.6.COD: SUBCONTRACTOR CLAIMS; DUTY OF CONTRACTOR:** The CONTRACTOR agrees to thoroughly review and analyze any claim for additional time, additional compensation, or other damages filed by a SUBCONTRACTOR, in good faith, as to its merits and amount. CONTRACTOR also agrees that it will not present or pass the claim through to the OWNER as if it were the CONTRACTOR'S claim, if the claim is subject to any valid legal or equitable defenses available to either OWNER or CONTRACTOR under the CONTRACT documents, the terms of the Subcontract, or applicable statutory or case law, which defenses include, but are not limited to, any and all notice and claim defenses arising under the Subcontract or the CONTRACT documents. If the SUBCONTRACTOR'S claim is subject to any valid legal or equitable defense under the CONTRACT documents, the Subcontract, or applicable statutory or case law, CONTRACTOR shall, as a condition precedent to the filing of any claim against the OWNER by virtue or any derivative liability of the OWNER under the CONTRACT documents or applicable law, defend against the invalid SUBCONTRACTOR claim in a court of competent jurisdiction, at CONTRACTOR'S sole cost and expense. Failure of CONTRACTOR to defend against invalid SUBCONTRACTOR claims as required in this paragraph shall constitute a complete and unequivocal waiver of any right of CONTRACTOR to seek reimbursement from OWNER. Further, if the CONTRACTOR fails to provide the defense required above, CONTRACTOR shall be obligated to indemnify and reimburse OWNER for all expenses and costs, including but not limited to attorney's fees and expert witness costs, incurred by OWNER in defending any lawsuit based upon a SUBCONTRACTOR claim, in which lawsuit a valid legal or equitable defense was available under the CONTRACT documents, the Subcontract or applicable statutory or case law.

(Page 108-2. Replace **Item 108.7.1. Reason for Suspension**, with the following: (Additional information has been added to item (5).)

**108.7.1.COD: REASONS FOR SUSPENSION:** The OWNER shall have the right by written order to temporarily suspend the work, in whole or in part, whenever, in the judgment of the OWNER, such temporary suspension is required:

- (1) in the interest of the OWNER generally;
- (2) due to government or judicial controls or orders which make performance of this CONTRACT temporarily impossible or illegal;
- (3) to coordinate the work of separate contractors at the job site;
- (4) to expedite the completion of a separate contract even though the completion of this particular CONTRACT may be thereby delayed;
- (5) because of weather conditions unsuitable for performance of the work, *including of designated ozone alerts as determined by the National Weather Bureau or other authorized agency*; or
- (6) because the CONTRACTOR is proceeding contrary to CONTRACT provisions or has failed to correct conditions considered unsafe for workers.

The written order of the OWNER to the CONTRACTOR shall state the reasons for suspending the work and the anticipated periods for such suspension. Upon receipt of the OWNER'S written order, the CONTRACTOR shall suspend the work covered by the order and shall take such means and precautions as may be necessary to properly protect the finished and partially finished work, the unused materials and uninstalled equipment, including the provision of suitable drainage about the work and the erection of temporary structures where necessary. The CONTRACTOR shall not suspend the work without written order from the OWNER and shall proceed with the work promptly when notified by the OWNER to resume operations.

(Page 108-3. Replace **Item 108.7.2. No Additional Compensation**, with the following: (There is an additional Item 108.7.2.(4).COD.))

**108.7.2.COD: NO ADDITIONAL COMPENSATION:** No additional compensation shall be paid to the CONTRACTOR for any suspension under **Item 108.7.1.(6)COD: Reasons for Suspension**, above or otherwise where same is caused by the fault of the CONTRACTOR. Where such temporary suspension is not due to the fault of the CONTRACTOR, or as a result of a designated Ozone Alert Period, it shall be entitled to:

- (1) an equitable extension of working time for the completion of the work, not to exceed the delay caused by such temporary suspension, as determined by the OWNER; and
- (2) the actual and necessary costs of properly protecting the finished and partially finished work, unused materials and uninstalled equipment during the period of the ordered suspension as determined by the OWNER as being beyond the CONTRACT requirements, such costs, if any, to be determined on the basis set forth in **Item 109.3. Payment for Extra Work**, herein; and
- (3) where the CONTRACTOR elects to move equipment from the job site and then return it to the site when the work is ordered resumed, the actual and necessary costs of these moves, in an amount determined by the OWNER under the provisions of **Item 109.3. Payment for Extra Work**; provided, however, no compensation shall be allowed if the equipment is moved to another construction project for the OWNER.
- (4) *where such temporary suspension is not due to the fault of the CONTRACTOR and is the result of a designated Ozone Alert Period, the CONTRACTOR shall be entitled to additional time as provided in (1) above, but is not entitled to additional compensation.*

Other than the additional time and compensation stated above, CONTRACTOR shall not be entitled to any other time extension related to the suspension, nor any additional compensation in any way related to such suspension.

(Page 108-3. Replace **Item 108.8. Delays; Extension Of Time; Liquidated Damages**, with the following: (There is an added note concerning ozone alerts in the first paragraph and the last paragraph has been added.))

**108.8.COD: DELAYS; EXTENSION OF TIME; LIQUIDATED DAMAGES:**

The CONTRACTOR may be entitled to an extension of working time under this CONTRACT only when all details supporting the claims for such extension are submitted to the OWNER in writing by the CONTRACTOR within fourteen (14) days from and after the time when any alleged cause of delay shall occur, and then only when such time is approved by the OWNER. *The CONTRACTOR shall notify the OWNER immediately upon encountering any condition that the CONTRACTOR believes may cause a claim for a time extension.* In adjusting the CONTRACT time for the completion of the project, unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to inability to obtain supplies and materials when orders for such supplies and materials were timely *made and materials are not available from other sources*, acts of God or the public enemy, acts of the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather conditions, *ozone alerts as determined by the National Weather Bureau or other authorized agency*, or delays of SUBCONTRACTORS due to such causes beyond their control shall be taken into consideration.

If the satisfactory execution and completion of the CONTRACT should require work and materials in greater amounts or quantities than those set forth in the CONTRACT, requiring more time for completion than the anticipated time, then the CONTRACT time *may* be equitably increased, but not more than in the same proportion as the cost of the additional work bears to the cost of the original work contracted for. No allowances shall be made for delays or suspension of the performance of the work due to the fault of the CONTRACTOR.

*No adjustment of the CONTRACT time shall be made if, concurrently with the equitable cause for delay, hindrance, disruption, force majeure, impact, or interference, there existed a cause for delay due to the fault or negligence of the CONTRACTOR or CONTRACTOR'S agents, employees or SUBCONTRACTORS. Notwithstanding any other provisions of the CONTRACT Documents, including the General and Special Provisions, no adjustment shall be made to the CONTRACT price and the CONTRACTOR may not be entitled to claim or receive any additional compensation as a result of or arising out of any delay, hindrance, disruption, force majeure, impact or interference, foreseen or unforeseen, resulting in adjustment of the CONTRACT time, including but not limited to those caused in whole or in part by the acts, omissions, failures, negligence or fault of the OWNER, its officers, servants or employees. Notwithstanding any other provision of the CONTRACT documents, all claims for extension of time must be submitted in accordance with **Item 108.8.COD: Delays; Extension of Time; Liquidated Damages**, and no act of the OWNER shall be deemed a waiver or entitlement of such extension.*

(Page 108-5. Replace **Item 108.11.2. CONTRACTOR Action**, with the following: (Item (3) has been replaced. The first part of the first sentence in Item (3) has been deleted.)

**108.11.2.COD: CONTRACTOR ACTION:** After receipt of a notice of termination, and except as otherwise directed by the OWNER, the CONTRACTOR shall:

- (1) **Stop Work:** Stop work under the CONTRACT on the date and to the extent specified in the notice of termination;
- (2) **No Further Orders:** Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion the work under the CONTRACT as is not terminated;
- (3) **Deliver and Assign to OWNER:** At the OWNER'S written request, deliver and assign to OWNER, or any person or entity acting on the OWNER'S behalf, any or all subcontracts, purchase orders and options made by CONTRACTOR in the performance of the work, and deliver to the OWNER true and correct originals and copies of such CONTRACT Documents;
- (4) **Transfer Title to OWNER:** Transfer title to the OWNER and deliver in the manner, at the times, and to the extent, if any, directed by the OWNER:
  - (a) **Deliver Fabricated or Unfabricated Parts:** *The fabricated or unfabricated parts, work in process, completed work, supplies and other material produced as a part of, or acquired in connection with the performance of, the work terminated by the notice of termination; and*
  - (b) **Deliver Completed or Partially Completed Plans:** *The completed or partially completed plans, drawings, information, and other property which, if the CONTRACT had been completed, would have been required to be furnished to the OWNER.*
- (5) **Complete Performance:** Complete performance of such part of the work as shall not have been terminated by the notice of termination; and
- (6) **Protect and Preserve Property:** Take such action as may be necessary, or as the OWNER may direct, for the protection and preservation of the property related to its CONTRACT which is in the possession of the CONTRACTOR and in which the OWNER has or may acquire an interest.

*At a time not later than thirty (30) Calendar Days after the termination date specified in the notice of termination, the CONTRACTOR may submit to the OWNER a list, certified as to the quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the OWNER. Not later than fifteen (15) Calendar Days thereafter, the OWNER shall accept title to such items and remove them or enter into a storage agreement covering the same, provided that the list submitted shall be subject to verification by the OWNER upon removal of the items, or, if the items are stored, within forty-five (45) Calendar Days from the date of submission of the list, and provided that any necessary adjustments to correct the list as submitted shall be made prior to final settlement.*

*(blank)*

## ITEM 109.COD: MEASUREMENT AND PAYMENT

(Page 109-1. Replace **Item 109.1. Payment for Labor and Materials, No Liens**, with the following: (A new paragraph at the end has been added))

**109.1.COD: PAYMENT FOR LABOR AND MATERIAL; NO LIENS:** The CONTRACTOR shall furnish payrolls and personnel records, which pertain to current construction contracts with the OWNER for the purpose of ascertaining compliance with minimum wage rates published by the OWNER. Monthly and final estimates for payment will not be processed unless the CONTRACTOR complies with this requirement in a timely manner.

The CONTRACTOR for itself or any of its SUBCONTRACTORS shall pay all indebtedness, which may become due to any person, firm, or corporation having furnished labor, material or both in the performance of this CONTRACT. It shall be the responsibility of each person, firm or corporation claiming to have furnished labor, materials or both, in connection with this CONTRACT, to protect its interest in the manner prescribed by applicable laws of the State of Texas, provided, however, that as this Contract provides for a public works project, no lien of any kind shall ever exist or be placed against the work or any portion thereof, or any public funds or retainage held by the OWNER; and any SUBCONTRACTOR shall look solely to the CONTRACTOR and the payment bond surety, and not the OWNER, for payment of any outstanding amounts due for labor, materials or any other indebtedness in connection with the work. However, the OWNER may, at any time prior to making final payment, require the CONTRACTOR to furnish a Consent of Surety to any payment due the CONTRACTOR for completed work and may, at the discretion of the OWNER or the request of the Surety, make the check jointly payable to the CONTRACTOR and the Surety.

*The OWNER shall conduct random sampling of wage rates on each CONTRACT. The OWNER will interview the CONTRACTOR'S and CONTRACTOR'S SUBCONTRACTOR'S employees in the field to verify the employee is working in and being paid for the classification shown on the payroll. In instances of noncompliance, the OWNER will initiate action as outlined in the CONTRACT Documents.*

(Page 109-3. Replace **Item 109.5.1. Monthly Estimate**, with the following: The dates for the submittal of the Monthly Estimate have been changed to "between the 10th and 15th of each month" and some additional wording has been changed in the second paragraph.)

### **109.5.1.COD: MONTHLY ESTIMATE:**

**109.5.1.1.COD: MONTHLY ESTIMATE – PUBLIC WORKS AND TRANSPORTATION:** *On contracts awarded and administered by the City of Dallas Department of Public Works and Transportation, except as otherwise provided by or designated in the CONTRACT, between the 10th day and the 15th day of each month, the CONTRACTOR shall make an estimate of the value of the work done during the month under the specifications. The CONTRACTOR shall prepare the estimate on a form or forms approved by the OWNER. The CONTRACTOR shall forward the estimate required above to the OWNER by no later than the last day of the month. The monthly estimate may include acceptable nonperishable materials delivered to and stored at the work site or a Bonded Warehouse, as defined in this addendum, payment for such stored materials shall be as described in **Item 106.4.COD: OFF-SITE STORAGE**. The monthly estimate shall also provide such supporting documentation as the OWNER or other applicable provisions of the specifications may require. The OWNER shall verify that the CONTRACTOR'S estimate matches the total value of work done. In the event of a discrepancy between quantities of work as shown in the CONTRACTOR'S estimate and measured quantities as shown in the OWNER'S verification, the OWNER'S determination or measurement shall be final, and the CONTRACTOR'S estimate shall be adjusted to reflect the quantities of work as shown by the OWNER'S verification. Payment shall be made by OWNER thirty (30) calendar days after receipt of an estimate from the CONTRACTOR minus the retainage amount specified in the CONTRACT. OWNER shall not be liable for interest on any late or delayed payment caused by any claim or dispute, any discrepancy in quantities as described above, any failure to provide supporting documentation or other information required with the estimate or as a precondition to payment under the CONTRACT, or due to any payment the OWNER has a right to withhold under the CONTRACT. At the midpoint, or at any subsequent time, if the OWNER determines that the progress on the CONTRACT is satisfactory in all respects, it may at its discretion cease to retain additional funds until the completion of the project, or until progress ceases to be satisfactory. The OWNER shall make the sole determination in this matter.*

*The CONTRACTOR shall submit to the OWNER a Schedule of Values for each Lump Sum item of work for review and approval twenty (20) Calendar Days before the work is scheduled to be performed. The CONTRACTOR shall itemize in the Schedule of Values the actual costs to the CONTRACTOR to perform the various parts of the Lump Sum item work, which shall include a reasonable overhead, and profit. Partial payment for Lump Sum items shall be made based on the value and percentage of the work in the bid item completed, as approved by the OWNER and as reflected in the Schedule of Values.*

The CONTRACTOR shall provide Quantity Verification documentation in a format acceptable to the OWNER, with each monthly estimate to substantiate the quantities submitted. The Quantity Verification process shall be utilized on a daily basis to document and agree on the quantity of each bid item installed, constructed, or performed during that day.

**109.5.1.2.COD: MONTHLY ESTIMATE – DALLAS WATER UTILITIES:** On contracts awarded and administered by the Dallas Water Utilities Department, between the 10th day and the 15th day of each month, the OWNER shall make an approximate estimate of the value of the work done during the month under the specifications. Whenever said estimate or estimates of work done since the last previous estimate exceeds \$100 in amount, a percentage of such estimate sums shall be paid the CONTRACTOR on or before the last day of the month next following. The monthly estimate may include acceptable nonperishable materials delivered to the work; such payment shall be allowed on the same percentage basis of the net invoice value as provided hereinafter. The percent retained by the owner shall normally be up to 10 percent at completion, unless otherwise stated. At the midpoint, or at any subsequent time, if the OWNER determines that the progress on the CONTRACT is satisfactory in all respects, it may, at its discretion, cease to retain additional funds until the completion of the project, or until progress ceases to be satisfactory. The owner shall make the sole determination in this matter.

The CONTRACTOR shall prepare the estimate on a form, or forms, approved by the OWNER. The CONTRACTOR shall forward the estimate required above to the OWNER by not later than the 15th day of the month. The monthly estimate may include acceptable nonperishable materials delivered to and stored at the work site or Bonded Warehouse, as defined in this addendum; payment for such stored materials shall be as described in **Item 106.4.COD: OFF-SITE STORAGE**, on the same percentage basis of the value as provided hereinafter. The monthly estimate shall also provide such supporting documentation as the OWNER or the other applicable provisions of the specifications may require. The OWNER shall verify that the CONTRACTOR'S estimate matches the total value of work done. In the event of a discrepancy between quantities of work as shown in the CONTRACTOR'S estimate and measured quantities as shown in the OWNER'S verification, the OWNER'S determination or measurement shall be final, and the CONTRACTOR'S estimate shall be adjusted to reflect the quantities of work as shown by the OWNER'S verification. Payment shall be made by OWNER about thirty (30) days after receipt of a complete and acceptable estimate from the CONTRACTOR minus the retainage amount specified in the CONTRACT. OWNER shall not be liable for interest on any late or delayed payment caused by any claim or dispute, any discrepancy in quantities as described above, any failure to provide supporting documentation or other information required with the estimate or as a precondition to payment under the CONTRACT, or due to any payment the OWNER has a right to withhold under the CONTRACT.

The CONTRACTOR shall submit to the OWNER a Schedule of Values for each Lump Sum item of work for review and approval twenty (20) Calendar Days before the work is scheduled to be performed. The CONTRACTOR shall itemize in the Schedule of Values the actual costs to the CONTRACTOR to perform the various parts of the Lump Sum item work, which shall include a reasonable overhead and profit. Partial payment for Lump Sum items shall be made based on the value and percentage of the work in the bid item completed, as approved by the OWNER and as reflected in the Schedule of Values.

The CONTRACTOR shall furnish to the OWNER such detailed information as OWNER may request to assist in the preparation of monthly estimates. It is understood that the monthly estimates shall be approximate only, and all monthly estimates and partial payments shall be subject to correction in the estimate rendered following the discovery of an error in any previous estimate, and such estimate shall not in any respect be taken as an admission of the OWNER of the amount of work done or of its quality or sufficiency nor as an acceptance of the work or the release of the CONTRACTOR of any of its responsibility under the CONTRACT.

(Page 109-3. Add the following:)

**109.5.1.3.COD: PAYMENT SCHEDULE FOR SUBCONTRACTORS:** Prior to the initial contract payment, the CONTRACTOR shall provide his anticipated payment schedule for each SUBCONTRACTOR listed on Schedule of Work and SUBCONTRACTOR/SUPPLIER Participation at the 25%, 50% and 75% payment levels of the CONTRACT. During construction, if payments to any SUBCONTRACTOR are not meeting the schedule as expected, an explanation must be submitted prior to payment of the monthly estimate, or as specified by the OWNER.

(Page 109-3. Add the following:)

**109.5.1.4.COD: WRITTEN SUBMITTALS:** *The CONTRACTOR is required to furnish the following written submittals.*

(1) **Monthly Estimate:**

- (a) *CONTRACTOR affidavit of SUBCONTRACTOR / SUPPLIER payment;*
- (b) *Quantity Verification Documentation;*
- (c) *Material on hand (Detailed breakdown and cross reference);*
- (d) *SUBCONTRACTOR / SUPPLIER affidavit;*
- (e) *CONTRACTOR'S certified payroll;*
- (f) *Neighborhood job opportunities form;*
- (g) *Inspector's overtime fees and re-testing cost's reimbursements have been paid;*
- (h) *Updated project schedule;*
- (i) *M/WBE Proposed Changes;*

(2) **Final Estimate:**

- (a) *CONTRACTOR affidavit of SUBCONTRACTOR / SUPPLIER payment;*
- (b) *Final Quantity Verification Documentation;*
- (c) *Post construction contractor evaluation (with final evaluation);*
- (d) *Release of claims (if applicable with final application);*
- (d) *Inspector's overtime fees and re-testing costs reimbursements have been paid;*
- (e) *Warranty(s) original(s);*
- (f) *M/WBE SUBCONTRACTOR / SUPPLIER evaluation(s);*
- (g) *Consent of surety to final payment;*
- (h) *Neighborhood job opportunity form;*
- (i) *Weekly certified payrolls (through completion of work)*
- (j) *Sworn statements of accounts*
- (k) *Where applicable, a "Letter of Satisfaction" from a private Property OWNER indicating that the CONTRACTOR has restored the property to an acceptable condition and paid all applicable fees after the CONTRACTOR used the property for construction related activities.*

(Page 109-4. Replace **Item 109.5.4. Final Payment**, with the following: The last two sentences have been deleted and a new paragraph has been added at the end.)

**109.5.4.COD: FINAL PAYMENT:** Whenever the improvements provided for by the CONTRACT shall have been completely performed on the part of the CONTRACTOR, as evidenced in the certificate of acceptance obtained according to **Item 105.10. Acceptance**, and all required submissions are provided to the OWNER, a final estimate showing the value of the work shall be prepared by the OWNER as soon as the necessary measurements and computations can be made. All prior estimates upon which payments have been made are subject to necessary corrections or revisions in the final payment. The amount of the final estimate, less any sums that have been previously paid, deducted or retained under the provisions of this CONTRACT, shall be paid to the CONTRACTOR within a reasonable period of time after final acceptance, provided that the CONTRACTOR has first furnished the OWNER a consent of surety to final payment;

**109.5.4.1.COD: FINAL CONTRACTOR'S REPORT:** The final CONTRACTOR'S Report of SUBCONTRACTOR/SUPPLIER Payment, evidencing that all indebtedness connected with the work and all sums of money due for any labor, materials, apparatus, fixtures or machinery furnished for or used in the performance of the work have been paid or otherwise satisfied, or that the person or persons to whom the same may be respectively due have consented to final payment; and

**109.5.4.2.COD: OTHER DOCUMENTATION:** The OWNER may reasonably require other documentation, including but not limited to, additional affidavits, lien waivers, and other such documentation needed to protect the OWNER'S interest.

In addition, the CONTRACTOR shall be required to execute the OWNER'S standard Affidavit of Final Payment and Release as a precondition to receipt of final payment.

*The acceptance by the CONTRACTOR of the final payment as aforesaid shall operate as and shall be a release to the OWNER from all claims or liabilities under the CONTRACT, including all SUBCONTRACTOR claims, for anything done or furnished or relating to the work under the CONTRACT or for any act or neglect of said OWNER relating to or connected with the CONTRACT.*

*All warranties and guarantees shall commence from the date of the certificate of acceptance. No interest shall be due the CONTRACTOR on any partial or final payment or on the retainage.*

*The CONTRACTOR will be evaluated by the OWNER. An example of the evaluation form is available at:*

*For Dallas Water Utilities Contracts:*

**2121 Main Street  
Suite 300  
Dallas, Texas 75201**

*For Public Works and Transportation Contracts:*

**320 E. Jefferson.  
Room 312  
Dallas, Texas 75203**

## ITEM 110.COD: ENVIRONMENTAL POLICY

(Page 110-1. Add the following:)

### 110.1.COD: ENVIRONMENTAL POLICY:

#### 110.1.1.COD: GENERAL:

**110.1.1.1.COD: PURPOSE:** *The City of Dallas (City) is committed to environmental stewardship and sustainability. The City achieves this commitment by systematically reducing its environmental impacts, through pollution prevention, regulatory compliance, and continuous improvement. In order to manage this commitment, the City has developed an Environmental Management System (EMS) per the ISO 14001, 2004 standard. CONTRACTORS and SUBCONTRACTORS are expected to reduce potential environmental impacts generated from construction and construction related activities.*

**110.1.1.2.COD: INSTRUCTIONS:** *CONTRACTORS shall review, sign, and submit the OWNER'S Environmental Record Affidavit (Form 24, Section A-29) to the OWNER before beginning work.*

*It is the CONTRACTOR'S responsibility to communicate the environmental commitment outlined in this document to its affected employees and/or SUBCONTRACTOR'S associated with this work.*

#### 110.2.COD: ADMINISTRATIVE REQUIREMENTS:

**110.2.1.COD: REGULATORY REQUIREMENTS:** *The CONTRACTOR shall comply with any and all applicable federal, state, and local statutes, laws, rules, regulations, ordinances, codes, and any amendments relating to the environment, hazardous substances or exposure to hazardous substances, including without limitation the Comprehensive Environmental Response, Compensation and Liability Act of 1980, the Hazardous Material Transportation Act, Resource Conservation and Recovery Act, the Toxic Substances Control Act, the Clean Air Act, and the Safe Drinking Water Act.*

#### 110.3.COD: CITY IS COMMITTED TO ENVIRONMENTAL POLICY:

*The Dallas City Council adopted this Environmental Policy in 2005 to guide the City's environmental efforts:*

*The City of Dallas is committed to a clean, safe, and healthy environment. As such, we will exercise environmental stewardship in our dealings with employees, other governments, citizens, City CONTRACTORS, business, and others in the community for our world today as well as for future generations. Caring for the environment is one of our core values, and this is demonstrated by ensuring our activities are in harmony with the natural world around us.*

#### 110.4.COD: ENVIRONMENTAL COMMITMENT IS EMBODIED BY THE FOLLOWING ACTIONS:

- (1) *Implementation of programs and procedures with the intent to meet or exceed all applicable environmental laws and regulations.*
- (2) *Continual improvement of our environmental performance through proactive environmental management and self-assessments and/or third-party assessments.*
- (3) *Prevention of pollution at its source through implementation of Best Management Practices (BMPs) and resource conservation measures to reuse, reclaim, and recycle materials we generate.*
- (4) *Utilization of Environmental Management Systems (EMS), as appropriate for our operations, to provide a framework for systematically reviewing and reducing our environmental footprint.*
- (5) *Employees will abide by all environmental regulations and demonstrate environmental compliance in their daily work practices.*
- (6) *Educate City employees on Dallas's environmental policies and motivate and encourage employees to practice environmental stewardship by raising awareness and sensitivity to environmental issues through City policies, regulations, training, and interactive dialogue.*
- (7) *Outreach to the citizens and businesses of our community by communication of this Policy and education on the importance of environmental stewardship for clean air and water and sustainable development for the City of Dallas.*

#### 110.5.COD: GREEN PURCHASING:

*CONTRACTORS must recognize the importance of exercising positive environmental stewardship while purchasing products for use on City of Dallas contracts. Purchasing environmentally friendly products can reduce costs, minimize environmental legal requirements, decrease human health concerns, and minimize environmental impacts and risks. There are numerous products on the market today, which reduce environmental impacts without additional cost. The Dallas City Council passed resolution (04-1722) on May 26, 2004, affirming that the City will:*

- (1) purchase environmentally preferred products, whenever feasible; and,
- (2) require contractors and consultants to use recycled and other environmentally preferred products whenever feasible.

For suggestions on product substitution, please contact the OWNER.

**110.6.COD: AIR QUALITY AND OZONE:**

The City of Dallas is located in a non-attainment area for ozone. Emissions from vehicles and construction equipment exacerbate air quality issues in our region. CONTRACTORS may receive information regarding Air Pollution Watch and Warnings by signing up for email notifications at [www.tceq.state.tx.us](http://www.tceq.state.tx.us). Bid specifications may also require the CONTRACTOR to submit a Clean Air Plan to the City of Dallas for the CONTRACTOR'S activities. To every extent possible, CONTRACTORS shall comply with the following:

- (1) Refuel vehicles after 3:00 p.m. or as late in the afternoon as possible. (The only exception to this policy is an emergency response vehicle which may be refueled as necessary to maintain readiness.) DO NOT top off your fuel tank.
- (2) Schedule meetings requiring vehicle trips after 10:00 a.m. or as late in the afternoon as possible.
- (3) Restrict the use of paints, solvents, cleaners, or other chemicals containing volatile organic compounds (VOCs) until after 10:00 a.m.
- (4) Encourage employees to use public transportation or car pool, when possible, to and from work.
- (5) Limit idling of all vehicles to less than five minutes. (Note: The City of Dallas passed an "anti-idling" ordinance prohibiting motor vehicles weighing more than 14,000 pounds from idling over five minutes from April 1 - October 31 of any calendar year. City code pertaining to this ordinance can be referenced in Chapter 5A - 15 and Chapter 30 - 1 of the Dallas City Code, as amended.)

**110.7.COD: MATERIAL SAFETY DATA SHEETS (MSDS):**

The MSDS is used to relay important information concerning a chemical to its user or other interested parties, such as spill responders or fire fighters. MSDS's must be available for review by employees during their work shift, and must be kept at the work site at all times while the chemical is in use or stored at that facility. MSDS's are readily available from the chemical manufacturers or SUPPLIERS and generally can be obtained through the manufacturer's web site. MSDS's for chemicals used on the City's property need to be provided to the OWNER before work can begin or before the chemical is brought onsite.

**110.8.COD: SPILLS AND RELEASES:**

CONTRACTORS must take measures to prevent pollution of the land, air, and waterways including the storm water system. If a spill or release occurs, you have a legal responsibility to immediately report such an incident to the appropriate regulatory agency and to the OWNER.

Examples of commonly used substances that may cause an adverse effect:

**Table 110.8.(a)COD: Commonly Used Substances That May Cause Adverse Effects**

Gasoline	Paints
Antifreeze / glycol	Solvents
Lubricating oil	Chemicals
Hydraulic Fluid	Sewage
Other Petroleum Products	Ammonia
Synthetic oils	Hot As halt
CFCs	Propane

**110.9.COD: ENVIRONMENTAL NOTICES OF ENFORCEMENT (NOE) AND NOTICES OF VIOLATION (NOV):**

The OWNER must be notified of any NOEs or NOV's received in the last three years. Refer to Form 24, Section A-19, of the CONTRACT for instructions on submitting environmental law violation documents. If an NOV or NOE is issued while doing City work, the contractor will inform the OWNER within 24 hours.

**110.10.COD: ENDANGERED SPECIES:**

*The Endangered Species Act is a regulation program established for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The U.S. Fish and Wildlife Service of the Department of the Interior maintains the list of 632 endangered species (326 are plants) and 190 threatened species (78 are plants). If an endangered species or nesting birds are uncovered during construction, immediately stop work and notify the OWNER.*

**110.11.COD: WETLAND REGULATORY AUTHORITY:**

*Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and mining projects.*

*Section 404 requires a permit before any dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g. certain farming and forestry activities). City of Dallas CONTRACTORS are required to comply with Section 404 of the Clean Water Act and any associated permit requirements. If, during construction, a wetland is encountered, avoid the wetland and immediately notify the OWNER.*

**110.12.COD: STORM WATER CONTROL / PERMITS:**

*Federal, state, and local storm water regulations require elimination and/or reduction of pollutants that enter our storm drains, rivers, creeks, and other waterways by way of storm water runoff. Pollutants include, but are not limited to sediment, trash, chemicals, oils, and/or greases. A storm water permit may be required and a Storm Water Pollution Prevention Plan (SWPPP) developed and implemented during construction for this project. (Refer to Section B, Technical Provisions, for the specific requirements pertaining to this project.) Whether or not a storm water permit is required, discharges of pollutants into any water body may be prohibited by federal, state, and local regulations.*

*(blank)*

## **DIVISION 200 SITE PROTECTION AND PREPARATION**

*(blank)*

## ITEM 201.COD: TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL

(Page 201-1: Replace **Item 201.3 Preconstruction Submittals**, with the following: (A new paragraph has been added before the former text.)

### **201.3.COD: PRECONSTRUCTION SUBMITTALS:**

*CONTRACTOR shall coordinate with OWNER to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) consistent with TCEQ General Permit Number TXR 150000 Relating to Discharges from Construction Activities.*

Prior to the start of construction, the CONTRACTOR shall submit to the OWNER'S representative for acceptance schedules for implementing stormwater pollution control measures in accordance with the erosion and sediment control plan or the construction Stormwater Pollution Prevention Plan (SWPPP). Work on the project shall not begin until the schedules for implementation of the controls and methods of operations have been reviewed and accepted by the OWNER. The SWPPP must be approved prior to the Notice of Intent (NOI) being sent to the TCEQ or the Construction Site Notice (CSN) being provided to Stormwater Management; erosion and sediment controls must be in place before construction activity begins. The CONTRACTOR shall provide the OWNER, for information purposes, proposed methods of stormwater pollution control for CONTRACTOR operations in areas which are outside the limits of the erosion control plan or the SWPPP (such as construction and haul roads, field offices, equipment and supply storage areas, portable process plants, and source material storage), as well as a plan for disposal of waste materials.

(Page 201-1. Add the following:)

### **201.3.1.COD: STORMWATER POLLUTION PREVENTION PERMIT:**

*As defined in the federal regulations, and under the authority granted to the TCEQ by the EPA, a Texas Pollutant Discharge Elimination System (TPDES) permit is required for construction activities that result in the disturbance of one or more acres of total land. Both the CONTRACTOR and the OWNER are responsible to obtain the permit coverage under the TCEQ General Permit Number TXR 150000 Relating to Discharges from Construction Activities. Permitting information and requirements may be obtained from:*

**TCEQ Office of Water,  
P.O. Box 13087  
Austin, TX 78711-3087  
- Use for regular and certified mail  
or [http://www.tceq.state.tx.us/nav/permits/sw\\_permits.html](http://www.tceq.state.tx.us/nav/permits/sw_permits.html).  
MAIN LINE: 512-239-6696**

*By City of Dallas, City Council resolution number 093042, dated December 9, 2009, the North Central Texas Council of Governments Integrated Storm Water Management System (iSWM), including various incentives to promote the use of iSWM Practices, has been adopted for voluntary use within the City of Dallas.*

**201.3.2.COD: NOTICE OF INTENT(NOI):** *If a permit is required, the CONTRACTOR shall sign a NOI at least seven (7) days before assuming operational control, as the Primary Operator and submit the original to the TCEQ, with a copy provided to the City of Dallas Stormwater Management Department. Any SUBCONTRACTORS performing earthwork activities are also required to obtain permit coverage as Secondary Operators.*

*Signatures must be provided in accordance with 30 Texas Administrative Code Section 305.44. The NOI serves as a notification to the TCEQ of construction activity as well as commitment that the CONTRACTOR understands the requirements of the permit for stormwater discharges from construction activities and that measures will be taken to implement and maintain storm water pollution prevention at the site. If an additional primary operator is added after the initial NOI is submitted, the new primary operator must submit an NOI at least seven (7) days before assuming operational control.*

The NOI is to be submitted at least 48 hours prior to the CONTRACTOR moving on site. The CONTRACTOR must provide a copy of the NOI to the OWNER, and to:

**City of Dallas**  
**Department of Public Works – Stormwater Management Section**  
**320 E. Jefferson, Room 108**  
**Dallas, Texas, 75203**  
**Fax: 214.938-4072**  
**Email: Stormwater@DallasCityhall.com**

The NOI and CSN must be located in the SWPPP for all operators; and posted at or near the construction site entrance, visible to the general public.

**201.3.3.COD: NOTICE OF TERMINATION (NOT):** If a permit is required, upon completion of the site construction and subsequent site stabilization under the terms of the Permit, the CONTRACTOR will sign and provide a NOT to the TCEQ and Stormwater Management within 30 days of achieving final stabilization, verified by Stormwater Management. The NOT serves as notice that the site is no longer subject to the requirements of the permit.

The Notice of Intent (NOI) and the Notice of Termination (NOT) are to be mailed to:

**TCEQ Office of Water,**  
**P.O. Box 13087**  
**Austin, TX 78711-3087**

**Use for regular and certified mail**  
**or [http://www.tceq.state.tx.us/nav/permits/sw\\_permits.html](http://www.tceq.state.tx.us/nav/permits/sw_permits.html).**  
**MAIN LINE: 512-239-6696**

For small sites, the Operator will remove the CSN from its posted position at the site or from the SWPPP, endorse and date it at the lower right portion of document to indicate the completion of the construction activity and to verify termination conditions have been met. The CSN should be provided to Stormwater Management only and not to the TCEQ.

**201.3.4.COD: STORMWATER POLLUTION PREVENTION PLAN (SWPPP):** The SWPPP is a document which consists of a plan to manage site water, sediment, and erosion, spill response, waste management plan, and the site parameters and techniques to be employed to reduce the release of sediment and pollution from the construction site. The SWPPP also documents regular inspections and maintenance of these measures and any changes made to maintain site compliance. Both the OWNER and the CONTRACTOR must develop a SWPPP; however, if a shared SWPPP is agreed upon, a certification letter indicating each party understands their responsibilities pertaining to the SWPPP must be included in the SWPPP. All Operators involved in a shared SWPPP must maintain a complete copy of the SWPPP for three years following the completion of the project.

**201.3.5.COD: SMALL SITES, DISTURBED AREA EQUAL TO OR GREATER THAN 1 ACRES BUT LESS THAN 5 ACRES (PERMIT REQUIRED):** The SWPPP will be included in the contract documents. The CONTRACTOR shall submit a schedule for implementation of the SWPPP ( i.e. grading, utilities, and stabilization plans) Deviations from the plan must be submitted to the OWNER for approval. The SWPPP is not warranted to meet all the conditions of the permit since the actual construction activities may vary from those anticipated during the preparation of the SWPPP. Modifications may be required to conform to the requirements of the Permit. A copy of the most current SWPPP must be kept at the construction site by the CONTRACTOR. Any alterations to the SWPPP proposed by the CONTRACTOR must be prepared and submitted by the CONTRACTOR to the OWNER for review and approval. Project Managers should consider the criteria for common plans of development when working with projects between 1-5 acres, and for those projects located within the Dallas Escarpment, or geologically similar areas.

**201.3.6.COD: LARGE SITES, TOTAL DISTURBED AREA GREATER THAN 5 ACRES (PERMIT AND SWPPP REQUIRED):** The CONTRACTOR must use control measures necessary to prevent and control soil erosion, sedimentation and water pollution. These control measures will be included in the contract document. The control measures shall be installed and maintained throughout the construction to assure effective and continuous water pollution control.

The controls may include, but are not limited to: silt fences, straw bale dikes, rock berms, diversion dikes, interceptor swales, sediment traps and basins, pipe slope drains, inlet protection, stabilized construction entrances, seeding, sodding, mulching, soil retention blankets, or other structural or non-structural storm water pollution controls. Deviations from the proposed control measures must be submitted to the OWNER for approval.

Prior to beginning construction, the CONTRACTOR must submit to the OWNER for approval the proposed pollution control devices to be used and schedule of implementation. This submittal shall include on site and off site areas such as equipment and material storage areas, staging sites, and other areas subject to water pollution that support the construction effort.

**201.3.7.COD: LARGE SITES, TOTAL DISTURBED AREA GREATER THAN 10 ACRES (PERMIT, SWPPP, SEDIMENT BASIN, AND MONITORING REQUIRED):** *the CONTRACTOR must use the control measures necessary to prevent and control soil erosion, sedimentation and water pollution as indicated in the SWPPP, and as included in the contract document. The control measures shall be installed and maintained throughout the construction to assure effective and continuous water pollution control.*

*The controls may include, but are not limited to: silt fences, straw bale dikes, rock berms, diversion dikes, interceptor swales, sediment traps and basins, pipe slope drains, inlet protection, stabilized construction entrances, seeding, sodding, mulching, soil retention blankets, or other structural or non-structural storm water pollution controls. Deviations from the proposed control measures must be submitted to the OWNER for approval.*

Projects with a disturbed area greater than 10 acres require implementation of a sediment basin or equivalent measures as indicated in the General Construction, and Dallas City Code Section 19-118. In addition, water quality monitoring of effluent leaving this site will be required for Total Suspended Solids (TSS) and for Turbidity after significant rain fall events, as defined in the General Construction Permit and Dallas City Code Section 19-118. All water quality monitoring locations shall be clearly shown on the SWPPP. Water quality measurements shall be recorded in the SWPPP. Regular water quality monitoring is the responsibility of the CONTRACTOR.

*Prior to beginning construction, the CONTRACTOR must submit to the OWNER for approval the proposed pollution control devices to be used and schedule of implementation. This submittal shall include on site and off site areas such as equipment and material storage areas, staging sites, and other areas subject to water pollution that support the construction effort.*

**201.3.8.COD: PAYMENT FOR TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION:** *When provided for in the bid proposal and CONTRACT, payment for temporary erosion, sedimentation, water pollution prevention and work performed under this specification shall be made as specified for the Contract pay items provided which price shall be considered full compensation for: (1) all clearing and grubbing, removals, excavation and backfill required for installation; (2) installation, maintenance, removals and restoration; and (3) all materials, labor, tools, equipment, overhead, profit and incidentals necessary to complete the work in accordance with plans, SWPPP, special provisions and this specification.*

*All temporary erosion, sedimentation, and water pollution prevention and control work required by the OWNER due in whole or in part to CONTRACTOR negligence, carelessness, lack of maintenance, or failure to install permanent controls called for in the plans, specifications, or SWPPP in a timely fashion, shall not be paid for under this Contract. All costs to do such required temporary erosion, sedimentation, and water pollution prevention and control work shall be borne by the CONTRACTOR. All such remedial work shall be performed in compliance with the requirements of this specification as directed by the OWNER.*

*If CONTRACTOR fails to implement controls as required by OWNER, OWNER will take steps to implement controls and costs shall be borne as described in **Item 201.1. Description.***

**201.3.9. COD: MEASUREMENT AND PAYMENT (TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL: LARGE SITES OVER 10 ACRES):** *Temporary erosion Control, Sedimentation and Water Pollution Prevention and Control shall be measured for payment per lump sum completed, in place, and in accordance with the plans and specifications, including all development of the SWPPP, installation and maintenance of the controls throughout the duration of construction, water quality monitoring and other appurtenant tasks. The contract unit price shall be the total compensation for furnishing, placing and maintaining control measures, for disposal of all surplus material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work, all in accordance with the plans and these specifications.*

**201.3.10. COD: MEASUREMENT AND PAYMENT (TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL: LARGE SITES OVER 5 ACRES):** *Temporary Erosion Control, Sedimentation and Water Pollution Prevention and Control shall be measured for payment per lump sum completed in place accordance with the plans and specifications, including all development of the SWPPP, installation and maintenance of the controls throughout the duration of construction, and other appurtenant tasks. The contract unit price shall be the total compensation for furnishing, placing and maintaining control measures, for disposal of all surplus material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work, all in accordance with the plans and these specifications.*

**201.3.11. COD: MEASUREMENT AND PAYMENT (TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL: SMALL SITES < 5 ACRES):** *Temporary Erosion Control, Sedimentation and Water Pollution Prevention and Control shall be measured for payment per lump sum completed, in place, and in accordance with the plans and specifications, including installation and maintenance of the controls throughout the duration of construction, and other appurtenant tasks. The contract unit price shall be the total compensation for furnishing, placing and maintaining control measures, for disposal of all surplus material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work, all in accordance with the plans and these specifications.*

*(blank)*

## ITEM 202.COD: LANDSCAPING

(Page 202-1. Add the following:)

**202.1.1.COD: TREES:** *The CONTRACTOR shall not damage or remove any trees unless authorized by the OWNER. Any tree pruning proposed to complete the work shall be submitted and approved by the OWNER prior to the work being started.*

*Unless otherwise stated in the contract, the CONTRACTOR shall take measures to protect existing trees during construction. Measures shall include, but not limited to, hand excavation or by other than open cut excavation under the drip line of existing trees. Payments for all protective measures are contingent on the CONTRACT.*

(Page 202-5. Replace **Item 202.5.4. Measurement and Payment**, with the following: (A new sentence has been added at the end of this item.))

**202.5.4.COD: MEASUREMENT AND PAYMENT (PLUGGING AND SOLID SODDING):** *Plugging and solid sodding shall be measured for payment in square yards (yd<sup>2</sup>) of sodded area completed in accordance with the plans and specifications. Plugging or solid sodding, as the case may be, shall be paid for at the contract unit price per square yard (yd<sup>2</sup>), complete in place, as provided in the proposal and contract. The contract unit price shall be the total compensation for furnishing and placing all sod, for all rolling and tamping, for all water, for disposal of all surplus material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work, all in accordance with the plans and these specifications. This shall also include all watering necessary to assure the sod germinates and maintains coverage throughout the maintenance period. If sod is paid as a separate item and the limits of measurements are not specified, it shall be measured as the limiting trench width as defined in the latest edition of the DWU Standard Drawings for Water and Wastewater Construction, sheet 112, or the approved excavation limits based on the OWNER's direction.*

(Page 202-6. Replace **Item 202.6.5. Measurement and Payment**, with the following: (A new sentence has been added at the end of the item.))

**202.6.5.COD: MEASUREMENT AND PAYMENT (BROADCAST SEEDING, DISCED SEEDING, AND HYDRAULIC MULCHING):** *Acceptable material for broadcast seeding, disced seeding, and hydraulic mulching shall be measured by the square-yard (yd<sup>2</sup>) or by the acre (ac), as stated in the Bid Item Description, complete in place. The work performed and materials furnished and measured as provided in this Item shall be paid for at the unit price for broadcast seeding, disced seeding, or hydraulic mulching of the type specified, as the case may be. The price shall be full compensation for furnishing all materials, including water for seed-fertilizer slurry and hydraulic mulching, fertilizer, and for performing all operations necessary to complete the work. This shall include all watering required to assure the grass will continue to grow.*

*(blank)*

## ITEM 203.COD: SITE PREPARATION

(Page 203-1. Add the following:)

**203.1.3.1.1.COD: WATER SERVICE MUST BE MAINTAINED:** *Water service must be maintained. If a temporary main is required to accomplish continuous service, it shall be installed and removed by the CONTRACTOR at CONTRACTOR'S expense, unless a separate bid item for this work is established in the CONTRACT. This shall include furnishing all labor, tools, materials, equipment, testing and incidentals necessary to complete the work, including all excavation and disposal of surplus material, transfer of services, removal of temporary main after work is complete and transfer of services back to the existing system, and protection and repair of the temporary system.*

(Page 203-2. Replace **Item 203.2. Maintenance of Streets during Construction**, with the following:)

### **203.2.COD: MAINTENANCE OF STREETS DURING CONSTRUCTION:**

*At all times, the CONTRACTOR shall maintain the surfaces of streets on which work was or is being performed. The maintenance required shall include the filling of holes; blading or otherwise smoothing of the street surfaces (particularly in a trench area); cleaning and removal of surplus excavation material rubbish, etc.; sprinkling of streets to abate dust nuisances; and the elimination of interference resulting from blocking the street to residents thereon. Any or all of such operations shall be performed by the CONTRACTOR upon demand by the OWNER, but the CONTRACTOR shall not wait for instruction from the OWNER before performing maintenance work obviously in need of being done to meet the requirements of these specifications. All costs of work covered by this paragraph shall be included in the price bid for the various items of work, and no separate payment shall be made.*

*In the event the CONTRACTOR fails or refuses to properly maintain the surfaces of streets on which work was or is being performed, the OWNER, after due notice to the CONTRACTOR, shall perform the necessary maintenance. All costs to the OWNER incurred in the performance of such work shall be deducted from any monies due or to become due to the CONTRACTOR for work performed, or the CONTRACTOR shall be billed for such costs directly as the OWNER shall elect. Notice to the CONTRACTOR to be given by the OWNER shall be in writing, and it shall be delivered to the CONTRACTOR or an authorized agent. Except in emergency cases, where immediate action is required under the provisions of **Item 107.18. Public Convenience and Safety** or **Item 107.19. Protection of Work and of Persons and Property (including Addendum Items)**, the OWNER shall have the right to remedy without notice as called for in **Item 107.18. Public Convenience and Safety**. The cost of all work done by the OWNER will be borne by the CONTRACTOR.*

*Where traffic must cross open trenches, such as street intersections and driveways, the CONTRACTOR shall provide suitable backfill bridges, protective barricades and such other safety equipment as required. The use of machinery must be so regulated as to preclude any unnecessary interference with traffic, utilities, etc. The CONTRACTOR shall abide by all applicable federal, state, or local laws governing excavation work, including OSHA and USEPA regulations.*

(Page 203-2. Add the Following:

### **203.2.1.COD: TRAFFIC RESTRICTIONS:**

*The following traffic restrictions shall be enforced during construction.*

- (1) *Two-way traffic shall be maintained on all streets at all times, unless approved by the OWNER. Qualified Flagmen should be used to maintain two-way traffic.*
- (2) *The CONTRACTOR will be responsible for barricading all projects. All barricades, warning signs, and traffic control devices shall conform, at a minimum, to the standards in the City of Dallas Traffic Barricade Manual and TxDOT Texas Manual on Uniform Traffic Control Devices (Texas MUTCD), latest edition.*
- (3) *When closing side streets, four working days notification is required for Fire and Police Departments. See contract for individual contact names and phone numbers.*

(Page 203-3. Replace **Item 203.3.2. Construction Methods**, with the following: (There is an added paragraph at the end of this item.))

**203.3.2.COD: CONSTRUCTION METHODS:** The entire right-of-way for this project and such additional areas, including public or corporate areas and public or corporate lands, as made available for construction of this project, shall be cleared of all structures and obstructions, as defined above, except that trees or shrubs shall be protected unless specifically designated by the OWNER for removal. Unless designated for removal without replacement, trees and shrubs shall be treated according to **Item 202.1. Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod, and Other Vegetation (with Addendum Items)**. Unless otherwise indicated on the plans, trees and stumps to be removed shall be cut off or otherwise removed as close to the natural ground as practicable on areas which are to be covered by at least 3-ft. (1m) of embankment. On areas required for borrow sites and material sources, stumps, roots, etc., shall be removed to the complete extent necessary to prevent such objectionable matter becoming mixed with the material to be used in construction.

Unless otherwise indicated on plans, all foundations and underground obstructions shall be removed to the following depths:

- (1) In areas to receive embankment, 2-ft. (0.6m) below natural ground or to bottom of structure.
- (2) In areas to be excavated, 2-ft. (0.6m) below the lower elevations of the excavation, or to the bottom of structure.
- (3) In all other areas, 1-ft. (0.3m) below natural ground or to bottom of structure.

All basement walls and floors, septic tanks and storage tanks within the limits of the right-of-way shall be removed and the resulting holes backfilled as directed by the OWNER. Holes remaining after removal of all obstructions, objectionable material, trees, stumps, etc., shall be backfilled. The CONTRACTOR shall complete the operation of preparing right-of-way so that the prepared right-of-way shall be free of holes, ditches and other abrupt changes in elevations and irregularities to contour.

The remaining ends of all abandoned-in-place storm sewers, culverts, sanitary sewers, conduits, and water or gas pipes shall be plugged with an adequate quantity of concrete to form a tight closure. All materials and debris removed shall become the property of the CONTRACTOR unless otherwise provided for on the plans or in the specifications and shall be removed from the right-of-way. Unless otherwise provided, all merchantable timber removed as previously specified shall become the property of the CONTRACTOR. Gravel, brick, stone or broken concrete, when permitted by special conditions *and reduced to sizes permitted, may be used* in the roadway embankment.

**203.3.2.1.COD: OVER-EXCAVATION:** *CONTRACTOR is required to avoid over-excavation of earth or overbreak of rock. He shall replace any excavation or overbreak with concrete fill or other material as directed by the OWNER to restore the strength of the foundation to its previous bearing and lateral support. There will be no additional compensation for this work.*

(Page 203-5. Replace **Item 203.5.6.5. Excavation for Altered Grade**, with the following: (A new sentence has been added to the end of this section.)

**203.5.6.5.COD: EXCAVATION FOR ALTERED GRADE:** If excavation for the conduit or appurtenance due to the altered grade is altered more than 1-ft. (0.3m) and has not been classified as a separate contract pay item, the increased or decreased amount of excavation due to the altered grade may constitute a basis for revised consideration by either party to the contract. Payment for altered grade, if made, will be in cubic yards. *Measurement and payment will be as specified in Item 504.7. Measurement and Payment of Backfill* and addenda made herein, *except the depth will be measured from the plan grade to the revised grade.*

(Page 203-5. Add the following:)

**203.5.6.6.COD: INSTALLATION ON TOP OF FILL:** *When pipe is to be installed in a proposed fill of any type, fill material shall be placed and compacted to the proposed grade elevation and then re-excavated for pipe installation.*

**203.5.6.7.COD: CLASS G EMBEDMENT:** *All trenches excavated in rock for wastewater mains to be embedded with class G embedment shall remain open for a minimum of 24 hours or the CONTRACTOR may, at no cost to the OWNER, line the sides of the excavation for the thickness of the concrete embedment with 1 inch thick asphalt impregnated felt boards.*

**203.5.6.8.COD: EXISTING CURBS:** *In all open cut excavations beneath an existing curb, the CONTRACTOR shall remove the existing curb, backfill and compact the trench, and install a new curb.*

(Page 203-5. Replace **Item 203.5.7.1. Blasting**, with the following:)

**203.5.7.1.COD: BLASTING:** *In cases where the plans and specifications do not require the use of explosives, if (after written approval by the OWNER) the CONTRACTOR elects to use explosives in the performance of the work, utmost care shall be exercised so as not to endanger life or property. The CONTRACTOR shall use only such methods as are currently utilized by persons, firms or corporations engaged in a similar construction business. The CONTRACTOR shall be solely responsible for the determination as to whether explosives shall be used and for any result from the use of explosives. Obtaining a blasting permit from the Dallas Fire Department does not constitute permission to use explosives. Permission to use explosives is not granted or denied prior to award. The CONTRACTOR shall not assume in its bid that permission to use explosives will be granted. Blasting will be considered for approval by the OWNER on a case-by-case basis. Denial by the OWNER of permission to use explosives shall not constitute a basis for a claim for additional costs.*

*Where use of explosives is permitted, the CONTRACTOR EXPRESSLY AGREES TO BE SOLELY RESPONSIBLE for the determination as to whether explosives shall actually be used, and for any result from the use, handling or storage of explosives, and shall DEFEND, INDEMNIFY AND HOLD COMPLETELY HARMLESS THE OWNER, its officers, agents and employees, and the Consulting Engineer against any and all claims, lawsuits, judgments, costs and expenses, for personal injury (including death), property damage or other harm for which recovery of damages is sought, suffered by any person or persons, as the result of the use, handling or storage of explosives by the CONTRACTOR or any SUBCONTRACTOR, REGARDLESS OF WHETHER SAID USE, HANDLING OR STORAGE WAS NEGLIGENT OR NOT, AND REGARDLESS OF WHETHER THE DAMAGE OR INJURY WAS CONTRIBUTED TO IN ANY WAY BY THE NEGLIGENCE OR FAULT OF THE OWNER, ITS OFFICERS, AGENTS OR EMPLOYEES, OR THE CONSULTING ENGINEER. In the event of conflict with any other indemnity paragraph in this CONTRACT, this paragraph controls. This indemnity paragraph is intended solely for the benefit of the parties and is not intended to create or grant any rights, contractual or otherwise, to any other person or entity. The CONTRACTOR shall furnish the OWNER and Consulting Engineer with evidence of insurance sufficient to cover possible damage or injury, which insurance shall either include the OWNER and Consulting Engineer as additional insureds or be of such character as to fully protect the OWNER and Consulting Engineer.*

*The following criteria with regard to the use of explosives and blasting shall be satisfied:*

- (1) **Certification:** *Certification by the proper authorities for personnel involved with the actual use of explosives is required and must be obtained prior to the use of explosives.*
- (2) **Insurance:** *The CONTRACTOR shall furnish the OWNER with evidence of insurance sufficient to cover any such possibility, which insurance shall either include the owner as an assured or be of such character as to protect the owner.*
- (3) **Restrictions:** *No blasting shall be permitted within highway right-of-way or railroad right-of-way without written permission from TxDOT, the railroad involved and the OWNER.*
- (4) **Limitations:** *When blasting is authorized, the blast shall be covered with heavy timbers chained together, a rope mat, or some other equally effective method of blast effect protection, approved by the OWNER. All explosives shall be stored in a safe and secure manner and such storage places shall be clearly marked, "DANGEROUS — EXPLOSIVES." Blasting caps and explosives shall be stored separately. In addition to the "DANGEROUS — EXPLOSIVES" sign which must be displayed, at least two signs marked, "EXPLOSIVES, TURN ALL RADIOS OFF," shall be placed in a conspicuous location readily visible to vehicular traffic and not less than 350-ft. (150m) from electric explosive caps storage area. During each blast, the exposed end of the pipe shall be covered with planking.*
- (5) **Notification:** *The CONTRACTOR shall notify each utility company having structures in proximity to the site of the work of the intention to use explosives. Such notice shall be given sufficiently in advance to enable the companies to take such steps, as they may deem necessary to protect their property from injury. Such notice shall not relieve the CONTRACTOR of responsibility for any damage resulting from blasting operations.*
- (6) **Laws and Ordinances:** *The method of blasting, storing, and handling explosives must be carried on in full conformance with the requirements of all federal and state laws and municipal ordinances.*

(Page 203-8. Replace **Item 203.8. Dust Control**, with the following: (A new paragraph has been added in **Item 203.8.1.COD Description**.)

**203.8.COD: DUST CONTROL:**

**203.8.1.COD: SPRINKLING FOR DUST CONTROL:** *Sprinkling* for dust control shall consist of the authorized application of water or other material approved by the OWNER on those portions of the projects as shown on the plans or as directed and as herein specified. It shall be the responsibility of the CONTRACTOR to take preventive measures to eliminate, reduce, or alleviate any dust nuisance in the work area. This control of dust nuisance is most important in populated areas. The OWNER will approve the method used. Should the CONTRACTOR fail to control dust as outlined above, the OWNER may suspend the work until corrective measures are taken.

*The CONTRACTOR shall maintain all excavations, embankment, stockpiles, haul roads, and access roads within or outside the project boundaries free from dust, which would cause a hazard or nuisance to adjacent Property Owners. The CONTRACTOR shall use sprinkling or other methods acceptable to the OWNER to control dust.*

**203.8.2.COD: MATERIALS:** Water or other material approved by the OWNER shall be furnished by the CONTRACTOR and shall be clean, free from industrial waste and other objectionable matter. Emulsions shall meet the requirements of **Item 302.3.5. Emulsions for Priming, Curing and Erosion Control (PCE)**.

**203.8.3.COD: CONSTRUCTION METHODS:** The CONTRACTOR shall furnish and operate a sprinkler equipped with positive and rapidly working cutoff valves and approved spray bars, which shall insure the distribution of material in a uniform and controllable rate of application. It shall be the CONTRACTOR'S continuous responsibility to be on call at all times including nights, holidays, weekends, etc. and respond in a timely manner, until acceptance of the project by the OWNER, to maintain the project free of dust in a manner which shall cause the least inconvenience to the public.

**203.8.4.COD: MEASUREMENT AND PAYMENT:** Sprinkling performed as provided above shall be measured by the 1,000-gallons (gals) as delivered on the project. Sprinkling provided in the proposal and the contract as a separate pay item shall be paid for in accordance with the contract unit price. When sprinkling is not classified separately for payment, then such sprinkling shall be considered as incidental work and shall not be paid for as a separate item; the cost thereof shall be included in such contract pay items as are provided. In either case, such pay items shall be the total compensation for all labor, materials, tools, machinery, equipment, and incidentals necessary to complete the work in accordance with the plans and this specification.

## **DIVISION 300 ROADWAY CONSTRUCTION**

*(blank)*

## ITEM 301.COD: SUBGRADE, SUBBASE, AND BASE PREPARATION

(Page 301-1. Replace **Item 301.1.1.2 Equipment**, with the following: (New paragraphs have been added at the end of this section.))

**301.1.1.2.COD: EQUIPMENT:** All equipment necessary for the construction of this item shall be on the project and shall be approved by the OWNER as to condition before the CONTRACTOR shall be permitted to begin construction operations on which the equipment is to be used. Any equipment that achieves the desired results in the time frame allowed is acceptable.

*In lieu of the subgrade equipment specified, the CONTRACTOR may, upon written permission from the OWNER, operate other subgrade equipment that will produce equivalent results in the same period of time as the specified equipment. If the substituted subgrade equipment fails to produce the desired results within the same period of time as would be expected of the specified equipment, as determined by the OWNER, its use shall be discontinued.*

- (a) **Subgrade Planer:** *An approved subgrade trimmer and maintainer with automatic grade and slope control shall be provided or, in the alternative, an approved subgrade planer shall be provided, mounted on visible rollers riding on the forms, having adjustable cutting blades that shall trim the subgrade to exact sections shown on the plans. Planer frames shall be heavy enough to remain on the forms at all times; and shall be of such strength and rigidity that, under a test made by changing the support from the wheels to the center for the type pavements as set out under "Subgrade Planer", they shall not develop a deflection of more than one-eighth of an inch (3.2 mm). Tractive power equipment used on the subgrade to pull the planer shall not be such as to produce ruts or indentations in the subgrade.*
- (b) **Subgrade Template:** *The template for checking the contour of the subgrade shall be provided and operated by the CONTRACTOR. The template shall rest upon the side forms and shall be of such strength and rigidity that, under a test made by changing the support to the center, it shall not develop a deflection of more than one-eighth inch (3.2 mm). It shall be provided with accurately adjustable rods projecting downward to the subgrade at one-foot (30 cm) intervals; and these rods shall be adjusted to the required cross-section when the template is resting on the side forms.*
- (c) **Compaction Equipment:** *Compaction equipment shall conform to the requirements of **Item 301.1.1.3.4.COD Proof Rolling**, with the exception that the roller for final subgrade shall be of the three-wheel or tandem, self-propelled type, weighing not less than five tons (4,500 kg).*

(Page 301-1. Replace **Item 301.1.1.3 Construction Methods**, with the following: (This section has been completely replaced.))

### **301.1.1.3.COD: CONSTRUCTION METHODS:**

#### **301.1.1.3.1.COD: SUBGRADE PREPARATION:**

*All areas beneath proposed pavement shall be proof rolled to detect areas of weakness prior to placement of fill material. In cut areas, the soil shall be proof rolled after excavation is completed to final subgrade elevation. Proof rolling shall be performed in accordance with **Item 301.1.1.3.4.COD Proof Rolling**.*

*Any soft or compressible areas detected during the proof rolling shall be undercut to firm soil. The proof rolling operation shall be observed by the OWNER to verify that firm non-yielding (non-pumping) subgrade soils are present at the base of the roadway excavation. Prior to fill placement, the subgrade soils at the base of the excavation shall be scarified and recompacted within a moisture content range of minus two (2) to plus four (4) percentage points of optimum moisture to a minimum of 95% Standard Proctor density (ASTM D 698). Density tests shall also be performed on any utility trench backfill beneath the proposed roadway to verify that adequate compaction levels have been achieved.*

#### **301.1.1.3.2.COD: UTILITY DITCH CUTS:**

*If in the opinion of the project inspector a utility ditch cut is unstable, the CONTRACTOR shall remove the unstable material and replace it with material suitable to the project inspector, and the replacement material shall meet the compaction requirements of **Item 504: Open Cut - Backfill** of the Standard Specifications and addenda thereto.*

*The CONTRACTOR shall notify the proper utility company 24 hours in advance of backfilling or removing the unstable material so the utility company can have a representative present during the removal. The CONTRACTOR shall use a probe rod to determine the depth of the utility to insure against damaging the utility. Any expense for damages or repairs to the utility due to the backfilling or removal of the unstable material shall be borne by the CONTRACTOR.*

If soft or loose, non-compact fill or utility trench backfill soil extends to depths of over three (3) feet below final subgrade (bottom of proposed pavement), excavation will terminate at a depth of three (3) feet below final subgrade. The upper eight (8) inches of soil at the base of the excavation shall then be reworked and compacted within a moisture content range of minus two (2) to plus four (4) percentage points of optimum moisture to a minimum of 95% Standard Proctor density. If the soils at the base of the cut are too wet and soft to allow expeditious compaction per specification requirements, the excavation should be deepened 12 inches (to a depth of four (4) feet below final subgrade) and compacted as well as possible at that depth at its existing moisture content prior to placement of fill in eight (8) inch compacted lifts. The removal and replacement of the unstable material must be by permission of and at the direction of the project inspector, and the removal limits shall be up to a maximum of three (3) feet below the top of the street paving subgrade by the length and by the width of the utility ditch cut or unstable area as determined by the project inspector. Any additional removal or backfill must be approved by the project superintendent or project manager.

Where existing underground utilities are present, the excavation must be terminated a sufficient distance above the utility line to prevent damage to the pipe. The OWNER and the Utility Company representative shall determine the necessary soil cover that must remain above the pipe so that damage will not occur to the existing utilities.

After compaction and approval of the excavation subgrade, backfill shall be performed to the required subgrade elevation (bottom of proposed pavement) using on-site soils or approved borrow placed in maximum eight (8) inch lifts and compacted to a minimum of 95% Standard Proctor density. The moisture content of granular soils (having a PI of 20 or less) at the time of compaction shall be from plus to minus three ( $\pm 3$ ) percentage points of the optimum moisture content. The moisture content of clay soils (having a PI in excess of 20) shall be from minus two (2) to plus four (4) percentage points above optimum. The CONTRACTOR has the option for backfill of unstable utility cuts and subgrade to use flowable fill approved by the OWNER having a compressive strength of at least 500 psi but not more than 1200 psi at 28 days. The subgrade soils shall then be stabilized per specification requirements.

After the excavation and construction of embankment has been substantially completed, the subgrade shall be brought to the proper alignment, cross section and elevation, so that after rolling as specified in **Item 301.1.1.3.4.COD Proof Rolling**, and subsequent finishing operations, it shall conform to the correct alignment, cross section and elevation. Rolling and sprinkling shall be performed as needed when and to the extent directed; and the roadbed shall be completed to or above the plane of the typical section shown on the plans and the lines and grades established by the OWNER.

After completion of the compaction and immediately ahead of the application of base or pavement, the subgrade planer shall be operated from approved forms in a manner to finish the subgrade to the required section. The subgrade shall then be tested with the approved template, operated and maintained by the CONTRACTOR. All irregularities which develop in excess of one-half inch in a length of 16 feet (12.5 mm in 5 M) measured longitudinally shall be corrected by lightly scarifying to a depth of from 2 to 3 inches, adding or removing material; reshaping; and recompacting by sprinkling and rolling. The completed subgrade shall have a uniform density of not less than 98 percent of the maximum density determined by ASTM D 698 to the depth of prepared subgrade specified in the plans. Moisture content shall be within minus 2 to plus 4 percent of optimum.

Complete drainage of the subgrade shall be provided at all times. The construction area shall be shaped to provide drainage of surface water. Surface water shall not be allowed to pond in or near the subgrade. Surface water shall be pumped immediately from the subgrade area after each rain and a firm subgrade maintained until the overlying pavement is placed.

Finishing of the subgrade by hand shall be permitted on pavement widening projects, on sections where the pavement width is not uniform, at intersections and elsewhere where the operation of the subgrade planer would not be practical. Subgrade finished by hand shall conform to the requirements above specified.

#### **301.1.1.3.3.COD: RECOMPACTED PAVEMENT SUBGRADE:**

If subgrade stabilization is not performed, the upper eight (8) inches of subgrade soil shall be compacted at minus two (2) to plus four (4) percentage points of optimum moisture to a minimum of 98% Standard Proctor density (ASTM D 698). Only on-site soil (comparable to the underlying subgrade soil) shall be used for fine grading proposed street and alley pavement subgrade. The subgrade shall be lightly scarified to a depth of from two to 3 inches before fine grading is performed to insure the resulting subgrade is a homogeneous, monolithic layer throughout. After fine grading, the subgrade shall again be watered if needed and re-compacted in order to re-achieve the moisture and density levels discussed above and provide a tight non-yielding subgrade. Sand shall not be allowed for use in fine grading the subgrade beneath street and alley pavement areas since these more porous soils can allow water inflow and ponding beneath the pavement section, resulting in heave and loss of subgrade soil strength. The subgrade moisture content and density must be maintained until paving is completed. The subgrade shall be watered just prior to paving to assure concrete placement over a moist subgrade.

**301.1.1.3.4.COD: PROOF ROLLING:****(1) Description:**

This Item shall govern for furnishing and operating heavy pneumatic tire compaction equipment for locating unstable areas of earthwork or base.

**(2) Equipment:**

The proof rolling equipment shall consist of not less than four pneumatic tire wheels, running on axles carrying not more than four wheels, and mounted in a rigid frame and provided with loading platform or body suitable for ballast loading. All wheels shall be arranged so that they will carry approximately equal loads when operating on uneven surfaces.

The proof roller under working conditions shall have a rolling width of from 8 feet to 10 feet, and shall be so designed that, by ballast loading, the gross load may be varied uniformly from 15 tons to 25 tons. The tires shall be capable of operating under the various loads with up to 150 pounds per square inch air pressure. Tires shall be practically full of liquid. (Tires shall be considered as being practically full when liquid will flow from the valve stem of a fully inflated tire with the stem in the uppermost position.)

The operating load and tire pressure shall be within the range of the manufacturer's chart as directed by the *OWNER*. The *CONTRACTOR* shall furnish the *OWNER* charts or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished.

The proof roller shall be towed by a suitable crawler type tractor or rubber tire tractor of adequate tractive capacity, or may be of the self-propelled type. A proof roller unit shall consist of either a self-propelled roller or combination of roller and towing tractor.

There shall be a sufficient quantity of ballast available to load the equipment to a maximum gross weight of 25 tons.

Rubber tire tractive equipment shall be used on base courses and asphalt pavements. Other type tractive equipment may be used on embankment subgrade. The heavy pneumatic tire roller unit shall be capable of turning 180 degrees in the crown width or operating in forward and reverse modes.

In lieu of the rolling equipment specified, the *CONTRACTOR* may, upon written permission from the *OWNER*, operate other compacting equipment that will produce equivalent results in the same period of time as the specified equipment. The *CONTRACTOR* shall submit together with any proposed alternate compacting equipment, the weight (empty and with proposed loading), the wheel configuration and load distribution along with his proposed procedure to provide full width and length coverage of the subgrade area within the required period of time. If the substituted compaction equipment fails to produce the desired results within the same period of time as would be expected of the specified equipment, as determined by the *OWNER*, its use shall be discontinued.

**(3) Construction Methods:**

This work shall be done when specified in the plans and specifications. The subgrade and base layer shall be proof rolled to locate unstable areas.

Within the ranges set forth in **Item 301.1.1.3.4.COD Proof Rolling**, the load and tire inflation pressures shall be adjusted as directed by the *OWNER*. It is proposed to use a contact pressure corresponding as nearly as practical to the maximum supporting value of the earthwork or base. A minimum of two coverages of the proof roller will be required. Each succeeding trip of the proof roller shall be offset by not greater than one tire width. Rollers shall be operated at speeds directed by the *OWNER* which shall be between 2 and 6 miles per hour.

Where the operation of the proof roller unit shows an area to be unstable or non-uniform, it shall be corrected in accordance with the applicable Item of Work.

**(4) Measurement:**

When proof rolling is called for in the plans and specifications, this Item will not be measured separately for payment, but all work covered under this Item shall be considered incidental to the pay items provided.

**(5) Payment:**

No separate compensation shall be provided for this item of work, but all costs necessary to perform this item of work shall be considered incidental to the pay items provided.

Unless otherwise provided on the plans, payment for reworking unstable or non-uniform areas, removing and replacing materials, addition of stabilizing materials, and all compaction and incidentals necessary to correct all irregularities will not be made directly but will be considered as subsidiary to the various bid items.

(Page 301-1. Replace **Item 301.1.1.4. Measurement and Payment**, with the following: (The entire section has been replaced.))

**301.1.1.4.COD: MEASUREMENT AND PAYMENT; PREPARATION OF SUBGRADE:**

*Preparation of subgrade shall not be measured for payment as a separate contract pay item unless specifically provided for in the contract provisions. Measurement of removal or backfill will be by the project inspector and the CONTRACTOR at the time of removal or backfill, and this measurement shall be final and agreed to by both parties at the time of removal or backfill. Preparation of the subgrade or fine grading shall not be paid for as a separate contract pay item unless specifically provided for in the contract proposal; and cost thereof shall be included in such contract items as are provided, which pay items shall be the total compensation for the furnishing of all labor, tools, materials, equipment and incidentals necessary to complete the work, including disposal of surplus material, all in accordance with the plans and these specifications. Removal of soft or compressible areas below eight (8) inches of the proposed bottom of pavement structure and replacement and recompaction as provided for in these specifications shall be paid for separately as "Removal and Replacement of Unstable Utility Trench and Subgrade" when provided for separately in the contract and proposal and shall be measured and paid for by the cubic yard as determined from the agreed upon measurement of actual average vertical depth up to a four (4) feet maximum depth below paving subgrade by the length and width of the removed utility ditch cut or unstable area.*

*The contract unit price per cubic yard bid for "Removal and Replacement of Unstable Utility Trench and Subgrade" shall be the total compensation for removal, hauling and delivering; for furnishing and placing all materials; for all dumping, placing, sprinkling, and tamping; and for all labor, tools, fuels, equipment and incidentals necessary to complete the work all in accordance with the plans and specifications.*

*The unit price bid for "Removal and Replacement of Unstable Utility Trench and Subgrade", shall not be subject to renegotiation under the underrun or overrun limitations as set forth in **Item 104.2.1. Increased or Decreased Quantities of Work**, of the Standard Specifications."*

(Page 301-3. Replace **Item 301.2.3.Lime Treatment Construction Methods**, with the following: (Two new paragraphs have been added.))

**301.2.3.COD: LIME TREATMENT CONSTRUCTION METHODS:**

**301.2.3.1.COD: GENERAL:**

*The required application rate of lime for treatment shall be as shown on the plans as the net quantity required. If required by the OWNER, the application rate of lime shall be determined by the OWNER based on Atterberg Limit determinations performed on actual on-site subgrade soils treated with lime additives. The rate of lime required shall be determined by the OWNER using an adjusted rate (normally up to 20 percent boost) above the laboratory determined rate required to reduce the PI of the lime treated on-site subgrade soils to 15. The adjusted rate used for clay subgrade soils shall not be less than 4% commercial hydrated lime per dry weight of subgrade soil (for 6 inch depth treatment - 22 lbs per square yard; for 8 inch depth treatment - 29 lbs per square yard) for subgrade soils having a liquid limit less than 50. The adjusted rate used for clay subgrade soils having a liquid limit of 50 or greater shall not be less than 6% commercial hydrated lime per dry weight of subgrade soil (for 6 inch depth treatment - 32 lbs per square yard; for 8 inch depth treatment - 43 lbs per square yard."*

It is a primary requirement of this specification to secure a completed course of treated material containing a uniform lime mixture, free from loose or segregated areas, or uniform density and moisture content, well bound for its full depth, and with a smooth surface and suitable for placing subsequent courses. It shall be the responsibility of the CONTRACTOR to regulate the sequence of work, to use the proper amount of lime, maintain the work, and rework the courses as necessary to meet the above requirements.

*The subgrade in all areas specified to receive street pavement shall be proof rolled in accordance with **Item 301.1.1.3.4.COD: Proof Rolling**, and **Item 301.1.1.3.1.COD: Subgrade Preparation**. Any soft or compressible areas detected during the proof rolling process shall be undercut to firm soil and backfilled as required by the OWNER with acceptable soil to make the final grade. Undercutting, backfilling, and compaction shall be performed as provided in **Item 301.1.1.3.1.COD: Subgrade Preparation**. All subgrade to receive lime treatment shall receive an initial scarification to the bottom of the specified subgrade treatment before the lime or lime slurry is added to the subgrade.*

Prior to beginning any lime treatment, the roadbed shall be constructed and shaped to conform to the typical sections, lines, and grades as shown on the plans or as established by the OWNER.

In cases where groundwater is present, application of lime for stabilization shall be evaluated by the OWNER.

(Page 301-5. Replace **Item 301.2.3.6. Compaction**, with the following: (The fourth sentence has been replaced.))

**301.2.3.6.COD: COMPACTION:** Compaction of the mixture shall begin immediately after final mixing and in no case later than three (3) days after final mixing. The material shall be aerated or sprinkled as necessary to provide optimum moisture. Compaction shall begin at the bottom and shall continue until the entire depth of the mixture is uniformly compacted as shown on the plans or specified by the OWNER. *The compacted mixture shall have a uniform density of not less than 98 percent of the maximum density as determined by ASTM D 698.* Moisture content shall be within minus 2 to plus 4 percent of optimum. After each section is completed, such tests as are necessary shall be made by the OWNER. If any portion fails to meet the density specified, it shall be reworked as necessary to obtain the specified density. After the mixture has been compacted, the surface shall be shaped to the required line, grades, and cross sections and then thoroughly rolled sufficiently lightly to prevent hairline cracking.

(Page 301-5. Replace **Item 301.2.3.7. Maintenance**, with the following: (New sentences have been added.))

**301.2.3.7.COD: MAINTENANCE:** The CONTRACTOR shall be required to maintain the completed soil lime base within the limits of its contract in good condition, satisfactory to the OWNER as to grade, crown, and cross section until such time as the surface course is constructed. *Only lime treated soil shall be used for fine grading proposed street pavement subgrade where lime treatment has been specified. The subgrade of low areas shall be lightly scarified to a depth of from two to 3 inches before fine grading is performed to insure the resulting subgrade is a homogeneous, monolithic layer throughout. Use of sand or sandy soil for fine grading beneath proposed street pavement areas is strictly prohibited.* The surface of the compacted layer shall be kept moist until covered by other base or paving material or application of a curing seal of emulsified asphalt conforming to requirements of **Item 302.3.5. Emulsions for Priming, Curing and Erosion Control (PCE)**. If a curing seal is used, it should be applied as soon as possible after completion of final rolling, at a rate of between 0.10- and 0.20-gallons-per-square-yard (0.5- to 1.0-liters-per-m<sup>2</sup>), the exact rate to be determined by the OWNER. No equipment or traffic shall be permitted on lime treated material for 72-hours after curing seal is applied, unless otherwise permitted by the OWNER. In cases where subgrade treatment or subbase sets up sufficiently to prevent objectionable damage from traffic, such layers may be opened to traffic 2-days after compaction. The CONTRACTOR shall immediately repair all irregularities or other defects that may occur at the CONTRACTOR'S expense. Repairs are to be made as directed by the OWNER and in a manner to insure restoration of a uniform surface and durability of the portion repaired.

(Page 301-7. Replace **Item 301.3.3.3.1. Subgrade Preparation**, with the following: (A new first paragraph has been added and a sentence has been deleted.))

**301.3.3.3.1.COD: SUBGRADE PREPARATION:**

*Cement Treated Base (CTB) shall consist of aggregate, cement and water uniformly mixed in a central plant, transported to the project, spread, compacted, shaped, finished, and cured in accordance with these specifications. It shall conform to the lines, grades, thicknesses, and typical cross-section shown on the plans.*

Unsuitable subgrade soil or material shall be removed and replaced with acceptable soil. The subgrade shall be firm and able to support without displacement of the construction equipment and compaction. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

(Page 301-7. Replace **Item 301.3.3.3.2. Mixing and Processing for Plant-Mixed Cement Treated Base**, with the following: (New paragraphs have been added to the end of this item.))

**301.3.3.3.2. MIXING AND PROCESSING FOR PLANT-MIXED CEMENT TREATED BASE:** The aggregate, cement and water shall be mixed in a pug mill as approved by the OWNER. The plant shall be equipped with feeding and metering devices that add the aggregate, cement, and water into the mixer in the specified quantities to produce a mixture that meets or exceeds the mix design criteria. Aggregate and cement shall be mixed sufficiently to prevent cement balls from forming when the mix water is added. Mixing time shall be sufficient to assure an intimate, uniform mixture of aggregate, cement, and water. The percentage of moisture in the aggregate, at the time of cement application, shall be the amount that assures a uniform and intimate mixture of aggregate and cement during mixing operations. It shall not exceed the specified moisture content required for adequate compaction. Free access to the plant shall be provided to the OWNER for construction quality control. The mixture shall be hauled to the paving area in trucks having beds cleaned of deleterious material.

*The CTB Materials shall be as follows:*

- (1) **Cement:** Cement shall comply with **Item 303.2.2. Portland Cement**, of the NCTCOG Specifications, latest edition.

- (2) **Aggregate:** The aggregate may be any granular material or combinations of aggregates that will, when mixed with adequate amounts of cement and water, produce laboratory mix design Unconfined Compression Test strengths as specified in the paragraph below in accordance with ASTM D 1632. The preceding tests will utilize the Moisture-Density Relation as determined by ASTM D 558:AASHTO T134. The maximum size of aggregate shall pass a 2-inch sieve.
- (3) **Laboratory Mix Design:** The CONTRACTOR shall submit a mix design for the proposed CTB to the OWNER for approval in advance of the proposed work. Unconfined compression strength test results shall be submitted with the mix design by the SUPPLIER of the Cement Treated Base (CTB) material. Work shall not begin until the mix design is approved by the OWNER.

(Page 301-8. Add the following:)

**301.3.3.8.COD: CONSTRUCTION QUALITY CONTROL PROGRAM:**

The CONTRACTOR shall be fully responsible for the quality of the Cement Treated Base (CTB) work. The CONTRACTOR shall be responsible for establishing at his sole expense a CONTRACTOR quality control program to insure the quality of work meets customary and normal quality for CTB work in the industry and meets all the requirements of this specification.

To insure that the construction of the Cement Treated Base is in accordance with the provisions of these specifications, the following City quality assurance testing program will be provided by the OWNER and performed by a testing laboratory approved or retained by the OWNER. The cost for additional testing to prove out deficient work shall be born solely by the CONTRACTOR.

**Tests Normally Performed by the OWNER's Quality Assurance Program:**

- (1) Establish the field moisture density curve in accordance with ASTM D 558 or AASHTO T 134 (Standard Compactive Effort). The results of this test performed on representative samples of CTB obtained from the area being processed at a time of about midway through the initial compaction phase will establish the optimum moisture content to be incorporated at the central mixing plant and the maximum density will serve as a basis for establishing the density for acceptance.
- (2) The Field-Density of the compacted CTB mixture shall be determined by any of the following: (1) Nuclear Method ASTM D 2922, (2) Sand Cone Method ASTM D 1556, (3) Water Balloon Method ASTM D 2167.
- (3) Four unconfined compression test cylinders will be molded from CTB material taken from the haul trucks at the job site for every 150 cubic yards of CTB placed, but in no case shall less than two sets of cylinders be taken from any one day's placement. The sets of cylinders shall be molded in standard Proctor molds, cured in accordance with ASTM D 1632, and tested in accordance with ASTM D 1633 procedures.
- (4) Visual inspection of loose and compacted thickness of the CTB layer will be included in the report as well as observations on surface scaling, construction joints and curing.

**Strength Requirements:** The unconfined compressive strengths required for the CTB material shall be 650 psi at 28 days.

Nonstructural CTB for utility backfill shall require compressive strengths of 200 psi at 28 days.

**Thickness Requirements:** The thickness required for the CTB material shall be no less than 4 inches unless otherwise specified in the plans or proposal.

**Acceptance of Work:** Acceptance of the work performed shall be based on strict compliance by the CONTRACTOR with the provisions of this specification. Pavement testing for thickness and unconfined compression strength shall be made in accordance with Standard Specification **Item 303.8. Pavement Testing and Evaluation (with addendum Items)**, and credits due the City for CTB work that is deficient in thickness or strength shall be deducted from payments due the CONTRACTOR in accordance with the provisions of **Item 303.8. Pavement Testing and Evaluation (with addendum Items)**.

Page 301-9. Replace **Item 301.3.4. Measurement and Payment**, with the following:)

**301.3.4.COD: MEASUREMENT OF WORK AND BASIS OF PAYMENT:**

**Measurement of Work:** CTB work shall be measured in square yards of completed and accepted Cement Treated Base course in accordance with the dimensions and requirements of the plans and specifications.

**Basis of Payment:** CTB work shall be paid for at the contract unit price per square yard of completed and accepted Cement Treated Base course less any credits due to the City as provided for in **Item 303.8. Pavement Testing and Evaluation (with addendum Items)**, of the Standard Specifications, which payment shall be considered full payment

for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work and to carry out the maintenance provisions in accordance with these specifications.

No allowances shall be made for any materials used or work performed outside the lines established by the OWNER unless approved in writing prior to the work

(Page 301-9. Add the following:)

### **301.3.5.COD: CEMENT STABILIZATION OF SUBGRADE SOILS:**

Cement stabilization of subgrade soils shall be performed in accordance with the applicable provisions of **Item 301.2.2. Portland Cement**, of subgrade soils of the Standard Specifications for Public Works Construction, as amended except as provided below.

Type I Portland Cement shall be used for stabilization of subgrade soils covered under this provision. All surface vegetation and debris shall be scarified and removed and any existing bituminous pavement shall be pulverized so that 100 percent shall pass a two-inch (50 mm) sieve before placement of cement or cement slurry.

Cement or cement slurry shall not be mixed or placed when the air temperature is below 40 degrees Fahrenheit (5°C) and falling, but may be mixed or placed when the air temperature is above 40 degrees Fahrenheit (5°C) and rising, the temperature being taken in the shade and away from artificial heat; and with the further provisions that dry cement shall be mixed or placed only when site and weather conditions, in the opinion of the OWNER, are suitable.

The subgrade to all areas specified to receive street pavement shall be proof rolled in accordance with special provisions **Item 301.1.1.3.4.COD. Proof Rolling**, and **Item 301.1.1.3.1.COD Subgrade Preparation**. Any soft or compressible areas detected during the proof rolling process shall be undercut to firm soil and backfilled as required by the OWNER with acceptable soil to make the final grade. Undercutting, backfilling, and compaction shall be performed as provided in **Item 301.1.1.3.1.COD. Subgrade Preparation**.

All subgrade soils with a soil plasticity index of 20 or greater shall be lime treated and cured before commencement of the cement stabilization work. Lime treatment shall be performed in accordance with **Item 301.2. Lime Treatment** of the standard specifications, as amended by the City. After the lime treated subgrade has cured the required time, the subgrade shall be cement stabilized in accordance with these revised specifications with the exception that the rate of cement specified in the table in this specification may be reduced by 2%.

All subgrade to receive cement stabilization shall receive an initial scarification to the bottom of the specified subgrade stabilization and shall be pulverized to required gradation of at least 60% passing the No. 4 sieve and 100% passing the 1 3/4 inch sieve before the cement or cement slurry is added to the subgrade. The soil moisture content shall be no higher than optimum moisture content before beginning the pulverization process. If the soil moisture content exceeds optimum moisture, the scarified subgrade shall be removed and spread or windrowed to expose the subgrade soil and the secondary grade to air to accelerate drying. When moisture content has been reduced to optimum or below, the subgrade material shall be respread to the desired subgrade cross section and cement stabilization shall begin.

Cement or cement slurry shall be added to the acceptably pulverized subgrade for only that area where the mixing, compaction, fine grading, and recompaction can be completed in daylight within 6 hours of application of the cement or cement slurry to the soil and in one continuous operation. If this entire operation is not completed within six (6) hours of application, the OWNER will evaluate the subgrade to determine if additional testing is required to verify that the effective subgrade modulus assumed for design ( $k=350$  pci) has been achieved.

Except in the CBD area or unless otherwise noted in the plans and specifications, the CONTRACTOR has the option, for soils with a P.I. less than 20 or for soils saturated above optimum moisture, to lime treat or dehydrate the subgrade with Class "C" fly ash or portland cement in advance of cement stabilization. Lime treatment shall be performed in accordance with **Item 301.2. Lime Treatment** as amended by the City. After the lime treated subgrade has cured the required time, or in the case of addition of Class "C" fly ash or portland cement, the subgrade has dehydrated sufficiently, the subgrade shall be scarified to the bottom of the specified cement subgrade stabilization and the subgrade shall be stabilized with cement as herein required except that if Lime treatment has been performed, the rate of cement may be reduced by 2%. Unless otherwise provided for in the contract, the cost for the Lime treatment or treatment with fly ash or portland cement prior to cement stabilization shall be borne by the CONTRACTOR.

If the cement stabilized subgrade is found not to be in compliance with these specifications or should the treated subgrade lose the required stability, compaction, or finish before the next course is placed or the project is accepted, the cement stabilized subgrade shall be removed and replaced, unless otherwise directed by the OWNER. The

CONTRACTOR shall bear the cost of any additional work or testing required by the OWNER to provide the subgrade in compliance with these specifications. If required, removal and replacement will be at the CONTRACTOR'S expense.

The cement stabilization shall be performed to the depth specified on the plan at the specified percent of cement to dry weight of soil. Unless specified in the CONTRACT, the suggested application rate for Type I Portland Cement for treatment to a depth of six (6) inches is outlined below:

**Table 301.3.5.(a).COD: Cement Stabilization Of Subgrade Soils**

Soil Plasticity Index (P.I.)	Application (percent)	Depth of Treatment (inches)	Cement Required (pounds/sq yard)
15 or less	6	8	52
25 or less but greater than 15	8	8	63
45 or less but greater than 25	10	8	72
Greater than 45	To be determined by OWNER	8	To be determined by OWNER

Approval of final mixing operations shall be based on gradation tests with at least 60 percent on a dry weight basis of the modified soil passing the No. 4 sieve at a moisture content near optimum and 100 percent passing the 1-inch sieve.

The cement stabilized soil shall be compacted to a minimum of 98 percent of the maximum dry density defined by the Standard Proctor Test (ASTM D-588), at a moisture content within -2% to +2% of optimum moisture.

Sand shall be specifically prohibited beneath pavement areas during final grading (after stabilization), since these more porous soils can allow water inflow, resulting in heave and strength loss of subgrade soils. Only cement stabilized soil shall be used for fine grading. After fine grading each area in preparation for paving, the subgrade surface shall be lightly moistened, as needed, and recompacted to obtain a tight non-yielding subgrade. Fine grading and recompaction shall be completed within 6 hours of the application of the cement or cement slurry.

The finished subgrade shall be continuously moist cured beginning immediately after completion of the cement stabilization of the subgrade until the next course is placed. Instead of continuous moist curing, the CONTRACTOR has the option of immediately wetting the finished cement stabilized subgrade by the use of pressure water distributors so that the cement stabilized subgrade surface is thoroughly and uniformly moistened, but without free water standing on the surface. Immediately after wetting the cement stabilized subgrade surface, the CONTRACTOR shall apply two-tenths (0.2) gallon per square yard asphalt SS-1 emulsion as a curing cover as provided for in **Item 301.3.3.5 Portland Cement Treatment** of the Standard Specifications.

The CONTRACTOR shall maintain this curing cover, so that all of the cement-stabilized subgrade shall be covered effectively with SS-1 emulsion until the pavement is placed on the subgrade.

After final grading, the depth of the stabilized subgrade shall be measured and verified by the OWNER to verify that the specified depth of stabilization has been achieved below the final pavement subgrade elevation.

Cement stabilization of subgrade soils shall be paid for as provided in **Item 301.3.4 Measurement and Payment**, using **Item 508. Soil Cement Stabilization Subgrade**, paid for per square yard, complete in place, and **Item 509. Portland Cement - Type I**, per ton, complete in place. No separate compensation shall be provided for preliminary treatment using lime stabilization, fly ash, or portland cement required to prepare the soil to meet gradations prior to the beginning of cement stabilization of subgrade soils.

(Page 301-9. Add the following:)

**301.3.5.1.COD: EQUIPMENT DESCRIPTION:** Cement Treated Base (CTB) may be constructed with any combination of machines or equipment that will produce the results meeting these specifications.

(Page 301-9. Add the following:)

**301.3.5.2.COD: CONSTRUCTION METHODS:**

*Preparation: Before other construction operations are begun, the area to be paved shall be graded and shaped as required to receive the Cement Treated Base (CTB) in conformance with the grades, lines, thicknesses and typical cross-section shown on the plans. Unsuitable subgrade soil or material shall be removed and replaced with acceptable soil. Subgrade shall be prepared and compacted in accordance with **Item 301.1.1.3.4.COD PROOF ROLLING** and **Item 301.1.1.3.1.COD SUBGRADE PREPARATION** of the Public Works amendments to the Standard Specifications. The density testing and CONTRACTOR notification requirements of **Item 303.5.1 Subgrade**, of the Addendum to the Standard Specifications shall apply. Forms shall be placed and removed in accordance with **Item 303.5.2 Placing and Removing Forms**, of the Standard Specifications.*

- (1) **Central Mixing Plant:** *The aggregate, cement and water shall be mixed in a pug mill as approved by the OWNER. The plant shall be equipped with feeding and metering devices that will add the aggregate, cement, and water into the mixer in the specified quantities to produce a mixture that will meet or exceed the mix design criteria as stated above. The aggregate and cement shall be mixed sufficiently to prevent cement balls from forming when the mix water is added. The mixing time shall be that which is required to secure an intimate, uniform mixture of aggregate, cement, and water.*

*The percentage of moisture in the aggregate, at the time of cement application, shall be the amount that assures a uniform and intimate mixture of aggregate and cement during mixing operations. It shall not exceed the specified moisture content required for adequate compaction.*

*Free access to the plant shall be provided to the OWNER, his inspector and his designated Commercial Testing Laboratory for construction quality control. The mixture shall be hauled to the paving area in trucks having beds cleaned of deleterious material.*

*The mixture shall be placed on a moistened subgrade in a uniform layer by an approved spreader that will deposit the required quantity per linear foot, without segregation, to produce a uniformly compacted base conforming to the grade and cross-section. Not more than 30 minutes shall elapse between placement of CTB in adjacent lanes at any location except at longitudinal and transverse construction joints.*

*Compaction shall start as soon as possible after spreading and the elapsed time between the addition of water to the CTB mixture and the start of compaction shall not exceed 60 minutes.*

*The provisions of (2) Weather Conditions and (3) Time of the Addendum and the Standard Specifications shall control the placement of CTB.*

- (2) **Compaction:** *At the start of compaction, the percentage of moisture in the mixture and in unpulverized aggregate lumps shall not be below or more than two percentage points above the specified optimum moisture content, and shall be less than that quantity which will cause the Cement Treated Base mixture to become unstable during compaction and finishing. The specified optimum moisture content and density shall be determined in the field by a Moisture-Density Test, AASHTO T 134 or ASTM D 558, on representative samples of Cement Treated Base mixture obtained from the area being processed at a time of about midway through the initial compaction operation. Prior to compaction, the mixture shall be in a loose condition for its full depth. The loose mixture shall then be compacted uniformly to the specified density. During compaction operations, initial shaping may be required to obtain uniform compaction and required grade and cross-section.*
- (3) **Finishing:** *When initial compaction is nearing completion, the surface of the Cement Treated Base shall be shaped to the required lines, grades, and cross-section. The moisture content of the surface material shall be maintained at not less than its specified optimum moisture content during finishing operations.*

*The surface shall be lightly scarified to remove any compaction planes, scales, or smooth surfaces left by equipment. Final compaction shall then be continued until uniform and adequate density is obtained.*

*The CTB shall be uniformly compacted to a minimum of 96% of maximum density.*

*Compaction and finishing shall be done in such a manner as to produce, in not longer than two hours, a smooth, dense surface free of compaction planes, cracks, ridges, or loose material.*
- (4) **Curing:** *After the CTB has been finished as specified herein, it shall be protected against drying for seven days by the application of bituminous prime coat. The finished CTB shall be kept continuously moist until the bituminous curing material is placed. The curing material shall be applied as soon as possible, not later than 24 hours after the completion of finishing operations.*

*At the time the bituminous prime coat is applied, the Cement Treated Base surface shall be dense, shall be free of all loose and extraneous material, and shall contain sufficient moisture to prevent excessive penetration of the bituminous material. The bituminous prime coat specified shall be uniformly applied to the surface of the completed Cement Treated Base at the rate of approximately 0.2 gallons per square yard with approved heating and distributing equipment. The exact rate and temperature of application for complete coverage without excessive runoff shall be approved by the OWNER.*

*Should it be necessary for construction equipment or other traffic to use the bituminous covered surface before the bituminous prime coat has cured sufficiently to prevent "pickup", sufficient granular cover shall be applied before such use. The curing material shall be maintained by the CONTRACTOR during the seven day protection period so that all of the Cement Treated Base will be covered effectively during this period. Finished portions of Cement Treated Base that are traveled on by equipment used in the construction shall be protected in such a manner so as to prevent equipment from marring or damaging completed work.*

- (5) **Construction Joints:** *At the end of each day's construction, a transverse construction joint shall be formed by cutting back into the completed work to form a full depth vertical face.*

*Cement Treated Base for large, wide areas shall be built in a series of parallel lanes of convenient length and width meeting the approval of the OWNER. Longitudinal joints shall be formed at the edge of each day's construction by cutting back into the completed work to form a full depth vertical face free of loose or shattered material.*

- (6) **Traffic:** *Completed portions of Cement Treated Base may be opened immediately to local traffic and to construction equipment provided the curing material or surface is not impaired as specified in the section on curing of this specification. The completed portions may be opened to all traffic after the seven-day curing period, provided the Cement Treated Base has hardened sufficiently to prevent marring or distorting of the surface by equipment or traffic.*

- (7) **Maintenance:** *The CONTRACTOR shall be required to maintain the Cement Treated Base in good condition until the overlying pavement structure has been placed over the CTB or all work has been completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. This work shall be done by the CONTRACTOR at his own expense and repeated as often as may be necessary to keep the CTB intact and in good condition. Faulty work shall be corrected immediately upon notification by the OWNER.*

*Any low areas shall be remedied by removing and replacing the CTB material for the full depth of treatment rather than by adding a thin layer of Cement Treated Base to the completed work.*

*No separate compensation shall be provided for maintenance of the CTB work in good condition but such work shall be considered incidental to the contract pay items provided and to pay item provided for Cement Treated Base.*

(Page 301-12. Replace **Item 301.5. Flexible Subbase or base (Crushed Stone / Concrete)** with the following:)

**301.5.COD: FLEXIBLE SUBBASE OR BASE (CRUSHED STONE/CONCRETE):** This item shall consist of a foundation course for a surface course or for other subbase or base courses; shall be constructed as herein specified in one or more courses in conformity with the typical section shown on the plans and to the lines and grades as established by the OWNER.

**301.5.1.COD: MATERIAL:**

**301.5.1.1.COD: GENERAL:** *This material shall consist of durable particles of crushed limestone or crushed concrete and shall be free of thin, laminated, or elongated pieces, or an excess of shale, dirt, organic matter or other materials that would be harmful to the production of a homogenous base coarse.*

**301.5.1.2.COD: GRADATION:** *The materials when tested by A.S.T.M. test methods for the test described below shall meet the following requirements:*

**Table 301.5.1.2.(a).COD: Gradation**

	Sieve	Specification
Retained on	1-3/4	0%
Retained on	7/8	10-35%
Retained on	3/8	30-50%
Retained on	No. 4	45-65%
Retained on	No. 40	70-85%

**301.5.1.3.COD: MOISTURE:** *The moisture content of this material at delivery shall not be greater than 5% by weight as determined by A.S.T.M. methods.*

**301.5.1.4.COD: TESTS:**

- (1) *Triaxial Class 1: minimum compressive strength, psi: 45 at 0 psi lateral pressure and 175 at 15-psi lateral pressure and 175 at 15-psi lateral pressure.*
- (2) *Liquid limits shall not exceed thirty-five (35).*
- (3) *Plasticity index shall not exceed ten (10) and shall not be less than four (4).*
- (4) *Wet Ball Mill shall not exceed forty (40).*
- (5) *Maximum increase in passing No. 40 sieve shall not exceed 20%.*

*Tests shall be made in accordance with A.S.T.M. latest methods and Texas State Highway Department testings.*

**301.5.1.5.COD: FOREIGN MATTER:** *The flexible base delivered shall be free of all foreign material or debris (i.e. reinforcement steel, dirt, plastic, trash).*

**301.5.1.6.COD: REJECTION:** *Aggregate that fails to meet the requirements of these specifications may be rejected by the OWNER. Such rejection shall incur no cost to the OWNER. Aggregate sources from which materials are delivered with properties not meeting these specifications may be rejected as further supply sources to the project by the OWNER.*

*(blank)*

## ITEM 302.COD: ASPHALT PAVEMENT

(Page 302-1. Replace **Table 302.2.2.(a) Course Aggregate Quality Requirements**, with the following: (In the Los Angeles Abrasion Test Method, the “TEX-410-A” method was changed to “TEX-410-F” method.))

**Table 302.2.2.2.(a).COD: Coarse Aggregate Quality Requirements<sup>1</sup>**

Characteristic	Test Method	Value
Deleterious Material	Tex-217-F, Part I, Determining Deleterious Material in Coarse Aggregates (Bituminous Mixtures)	1.5% Max
Decantation	Tex-217-F, Part II, Decantation Test for Coarse Aggregate (Bituminous Mixtures)	1.5% Max
Los Angeles Abrasion	Tex-410-F, Abrasion of Coarse Aggregate Using the Los Angeles Machine (ASTM C131)	40% Max
Magnesium Sulfate Soundness Loss, 5 Cycle	Tex-411-A, Soundness of Aggregate Using Sodium Sulfate or Magnesium Sulfate	30% Max. (lower value may be shown on plans)
Coarse Aggregate Angularity Two Crushed Faces	Tex-460-A, Part I, Determining Crushed Face Count	90% Min.
Flat Elongated Particles	ASTM D4791 Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate	20% Max. @ 3:1

1. Sampled during delivery to the plant from the stockpile, unless otherwise shown on the plans.

(Page 302-2. Replace **Table 302.2.3.(a) Fine Aggregate Quality Requirements**, with the following: (In the Los Angeles Abrasion Test Method, the “TEX-410-A” method was changed to “TEX-410-F” method.))

**Table 302.2.3.(a).COD: Fine Aggregate Quality Requirements<sup>1</sup>**

Characteristic	Test Method	Value
Linear Shrinkage	Tex-107-E, Determining the Bar Linear Shrinkage of Soils	6% Maximum
Sand Equivalent Value	Tex-203-F, Sand Equivalent Test	45% Maximum

1. Sampled during delivery to the plant from the stockpile, unless otherwise shown on the plans.

(Page 302-2. Replace **Table 302.2.4.1.(a) Mineral Filler Gradation**, with the following: (In the Los Angeles Abrasion Test Method, the “TEX-410-A” method was changed to “TEX-410-F” method.))

**Table 302.2.4.1.(a).COD: Mineral Filler Gradation**

Sieve Size	Retained on Sieve By Weight
3/8" Sieve	0%
No. 10 Sieve	0-30%
No. 200 Sieve	85-100%

(Page 302-15. Replace **Item 302.7.4 Construction Methods**, with the following: (The second paragraph has been replaced.))

**302.7.4.COD: CONSTRUCTION METHODS:** Asphalt materials shall be handled in accordance with **Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.**

*The asphaltic mixture, when placed with a spreading and finishing machine, or the tack coat shall not be placed when the air temperature is below 50° F and is falling, but it may be placed when the air temperature is above 40° F and is rising. The asphaltic mixture, when placed with a motor grader, shall not be placed when the air temperature is below 60° F and is falling, but may be placed when the air temperature is above 50° F and is rising. The air temperature shall be taken in the shade away from artificial heat. Mat thickness of 2 inches and less shall not be placed when the temperature of the surface on which the mat is to be placed is below 50° F.*

When, in the opinion of the OWNER, the base is thoroughly dry and is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods. The asphaltic material shall be applied to the cleaned base at the approximate rate of 0.15- to 0.25-gallons-per-square-yard (0.75- to 1.25-L-per-m<sup>2</sup>) of surface area. The application shall be made with an approved type of self-propelled pressure distributor so constructed and operated as to distribute the material evenly and smoothly in the quantity specified or directed. The CONTRACTOR shall provide all necessary facilities for determining the temperature of the asphaltic material in all of the heating equipment and in the distribution, for determining the rate at which it is applied, and for securing uniformity at the junction of two distributor loads.

The OWNER shall select the temperature of application within the limits recommended in **Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials**, based on the temperature-viscosity relationship that shall permit application of the asphalt. The CONTRACTOR shall apply the asphalt at a temperature within 15°F (3°C) of the temperature selected.

No traffic, hauling or placing of subsequent courses shall be permitted over the freshly applied prime coat until authorized by the OWNER.

The CONTRACTOR shall be responsible for the maintenance of the surface until the work is accepted by the OWNER.

(Page 302-16. Replace **Table 302.8.2.3.(b) Aggregate Tests**, with the following: (The Sieve Analysis concerning ASTM Designation C136 has been changed to Tex-200-F.))

**Table 302.8.2.3.(b).COD: Aggregate Tests**

Property	Test
Preparation of Soil Constants	Tex-101-E Preparing Soil and Flexible Base Materials for Testing
Liquid Limit	ASTM D4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
Plastic Limit	ASTM D4318 (same as above)
Plasticity Index	ASTM D4318 (same as above)
Sieve Analysis	Sieve Analysis Tex-200-F - Sieve analysis of fine and coarse aggregates. Reference <b>Item 302.2.4.1. Gradation (with Addendum Items).</b>
Wet Ball Mill	Tex-116-E Ball Mill Method for Determining the Disintegration of Flexible Base Material
Sand Equivalent	ASTM D2419 Sand Equivalent Value of Soils and Fine Aggregate

(Page 302-17. Replace **Item 302.8.3. Construction Methods**, with the following: (The sixth paragraph has been replaced and the table has been modified.))

**302.8.3.COD: CONSTRUCTION METHODS:** Asphalt materials shall be handled in accordance with **Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.**

Mixing plants may be either the weight-batching type plant, the continuous mixing type plant, or the drum mixing type plant as described in **Item 302.9.5. Mixing Plants**, except that requirements for Type “B” and “D” mixtures of fine graded surface course are deleted.

Equipment for storage, weighing and heating of materials shall be as described in **Item 302.9.4. Equipment.**

The OWNER shall designate the asphalt content to be used in the mixture after design tests have been made with the aggregates to be used in the project. When tests as determined by the OWNER are made, samples of the mixture shall not vary from the asphalt content designated by the OWNER by more than 0.5-percent dry weight (based on total mixture). The asphaltic material will form typically 4- to 9-percent of the mixture by weight.

The mixture shall consist of a uniform mixture of mineral aggregates and asphaltic material.

*The asphaltic mixture may be sampled from the plant, truck, or paving machine. When tested in accordance with the latest methods outlined in TxDOT Test Methods Tex-206-F, Tex-207-F, Tex-208-F and Tex-227-F, the asphaltic mixture shall have the following laboratory density and stability:*

**Table 302.8.3.(a).COD: Stability of Asphalt Base Course**

<i>Property</i>	<i>Value</i>
<i>Density (%)</i>	<i>Minimum: 95% Maximum: 97% Optimum: 96%</i>
<i>Stability (%) Hveem Stabilometer</i>	<i>Not less than 35%, except when otherwise shown on the plans</i>

(Page 302-18. Replace **Item 302.9.3. Paving Mixture**, with the following: (The last sentence has been removed, a new sentence and a new paragraph have been added, and a new table has been added.))

**302.9.3.COD: PAVING MIXTURE:** The paving mixture shall consist of a uniform mixture of coarse aggregate, fine aggregate, mineral filler, when required, and asphaltic material, accurately proportioned by weight. The grading of each constituent shall be such as to produce, when properly proportioned, a mixture conforming to the following limitations for grading the type specified. The exact proportions of each constituent producing the total aggregate within these limits shall be as directed by the OWNER, and when tested by standard laboratory methods, the mixture shall meet the requirements listed in **Tables 302.9.3.(a) through (f)**. The OWNER shall specify or approve a mixture within the specified limits for all types of mixtures, which shall be suitable for the work in which the asphaltic pavement shall be used. *The Paving Mixture table (below) lists the tolerance of the Paving Mixtures retained by weight or volume. The asphaltic material shall form from 4.0 to 7.0 percent of the mixture by weight or from eight to 16 percent of the mixture by volume.*

*The aggregate portion of the paving mixture products shall not vary from the design gradation by more than the tolerances that follow. The material passing the No. 200 sieve is further restricted to conform to the limitations for the master grading for the type specified. The asphaltic material portion of the paving mixture shall not vary from the design amount by more than the allowed tolerance and is restricted to conform to the master limits.*

**Table 302.9.3.1.(a).COD: Paving Mixture**

	<i>Tolerance Percent by Weight or Volume as Applicable</i>
<i>Retained on 1-¼” to No. 10 Sieve</i>	<i>Plus or Minus 5%</i>
<i>Retained on No. 40 to No. 200 Sieve</i>	<i>Plus or Minus 3%</i>
<i>Asphalt, Weight</i>	<i>Plus or Minus 0.5%</i>
<i>Asphalt, Volume</i>	<i>Plus or Minus 1.2%</i>

(Page 302-18. Replace **Table 302.9.3.(a) Dense Graded Hot Mix Master Grading**, with the following: ( Sieve Sizes No. 4 and No. 200 have been changed.))

**Table 302.9.3.(a).COD: Dense Graded Hot Mix<sup>1</sup> Master Grading**

SIEVE SIZE	TYPE OF MIXTURE						
	A Coarse Base	B Fine Base	C Coarse Surface	D Fine Surface	F Fine Mixture	CMHB – C Coarse Surface	CMHB – F Fine Surface
	PERCENT PASSING BY WEIGHT						
1 ½"	100						
1 ¼"	95 - 100						
1"		100					
7/8"	20 – 50	95 – 100	100			98 – 100	
5/8"		75 - 95	95 – 100			95 – 100	
½"	50 - 70			100			98 – 100
3/8"		60 - 80	70 - 85	85 - 100	100	50 – 70	85 – 100
¼"					95 – 100		
No. 4	30 – 50	<b>40 - 50<sup>2</sup></b>	43 - 63	50 - 70		30 – 45	40 – 60
No. 10	20 – 34	27 - 40	30 - 40	32 - 42	32 – 42	15 – 20	15 – 25
No. 40	5 – 20	10 – 25	10 - 25	11 - 26	9 - 24	6 – 20	6 – 20
No. 80	2 – 12	3 - 13	3 - 13	4 - 14	3 – 13	6 – 18	6 – 18
No. 200	<b>1 – 6<sup>3</sup></b>	<b>1 – 6<sup>3</sup></b>	<b>1 – 6<sup>3</sup></b>	<b>1 – 6<sup>3</sup></b>	<b>1 – 6<sup>3</sup></b>	<b>5 – 8</b>	<b>5 – 8</b>
VMA % minimum	11	12	12	14	15	14	15

1. These mixtures shall be designed using a Texas Gyrotory Compactor (TGC) and in accordance with test Method Tex-204-F Design of Bituminous Mixtures. Design must be researched and based on intended use.
2. This value has been changed from NCTCOG, Version 4.0.
3. For Sieve No. 200, these values will be **2 – 8** when test method Tex-200-F, Part II (Washed sieve analysis) is used.

**Tolerances:** *The gradation of the aggregate and the asphalt cement content of the produced mixture shall not vary from the job-mix formula by more than the tolerances allowed herein. When within applied tolerances, the gradation of the produced mixture may fall outside the master grading limits for any of the sieve sizes from the largest sieve size on which aggregate may be retained down through the no. 80 sieve. Only the quantity of aggregate retained on the no. 200 sieve is further restricted to conform to the master grading limitations on table ii.*

(Page 302-20. Replace **Item 302.9.3.1. Extraction Test**, with the following:)

**302.9.3.1.COD: EXTRACTION TEST:** *Extraction tests for bitumen content shall be made for each 500 tons produced or fraction thereof. Extraction tests shall conform to TxDOT Test Method Tex-210-F. Samples of the asphaltic mixture may be taken from the plant, trucks or paving machine.*

**Table 302.9.3.(f).COD: Asphalt Pavement Mixture Stability**

<b>Property</b>	<b>Value</b>
Density (%)	<i>Minimum: 95%</i> <i>Maximum: 97%</i> <i>Optimum: 96%</i>
Stability (%) Hveem Stabilometer	<i>Unless otherwise shown on the plans, not less than 40 applied on arterials with truck traffic, and not less than 35 for residential applications</i>

(Page 302-22. Replace **Item 302.9.4.9. Rollers**, with the following: (A new sentence has been added at the end of the paragraph.))

**302.9.4.9.COD: ROLLERS:** Rollers shall meet the governing specifications for **Item 301.1.2. Rolling of Embankment, Subgrade, or Flexible Base (with Addendum Items)**. *The use of vibratory roller on overlay thickness less than 1.5 inches will not be permitted.*

(Page 302-25. Replace **Item 302.9.6.7. Rollers**, with the following: (The first paragraph has been deleted and new wording has been added.))

**302.9.6.7.COD: COMPACTION:**

- (1) **Compaction Meets Requirements of Plans:** The pavement shall be compacted thoroughly and uniformly with the necessary rollers to obtain the density, stability, and cross section of the finished paving mixture meeting the requirements of the plans and specifications and the approval of the *OWNER*.
- (2) **Three Wheel, Tandem, or Vibratory Rollers:** When rolling with the three wheel, tandem, or vibratory rollers, rolling shall start longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the rear wheel unless otherwise directed by the *OWNER*. The use of vibratory roller on overlay thicknesses less than 1-1/2 inches will not be permitted. Alternate trips of the roller shall be slightly different in length. On super-elevated curves, rolling shall begin at the low side and progress toward the high side unless otherwise directed by the *OWNER*. When rolling with vibratory steel-wheel rollers, the manufacturer's recommendation shall be followed unless directed otherwise by the *OWNER*. Rolling shall be continued until no further density can be obtained and all roller marks are eliminated. The motion of the roller shall be slow enough at all times to avoid displacement of the mixture. If any displacement occurs, it shall be corrected at once by the use of rakes and with fresh mixture where required. The roller shall not be allowed to stand on pavement that has not been fully compacted. To prevent adhesion of the surface mixture to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water will not be permitted. All rollers must be in good mechanical condition. Necessary precautions shall be taken to prevent the dripping of gasoline, oil, grease or other foreign matter on the pavement, either when the rollers are in operation or when standing.
- (3) **In-Place Compaction Control:** In-Place compaction control is required for all mixtures.
  - (A) *Asphaltic concrete should be placed and compacted to contain not more than 9 percent nor less than 5 percent air voids unless otherwise indicated. The percent air voids will be calculated using the maximum theoretical specific gravity of the mixture determined according to TX DOT Test Method Tex-227-F. Roadway specimen, which shall be either cores or sawed-sections of asphalt pavement, will be tested according to TX DOT Test Method Tex-207-F. The same specimen shall be used for determining both the maximum theoretical density and field density. Specimens used for field density determinations shall be carefully crumbled, using heat if necessary, and the maximum theoretical density determined as hereinbefore specified. If heating is necessary, the specimen shall be heated to the lowest temperature required for proper preparation of the sample. The use of nuclear field determinations shall not be accepted as the basis for acceptance with respect to density, however, an approved nuclear gauge may be used to establish a rolling pattern.*

- (B) *The CONTRACTOR shall be responsible that the compaction of the asphaltic concrete in place will attain between five and 9 percent air voids. The CONTRACTOR'S responsibility for the required compaction includes the selection of rolling equipment and the selection of rolling patterns to achieve the required compaction within the guidelines provided herein. The above selections of equipment and procedures must provide the required qualities of profile, smooth riding surface, and consistent workmanship in appearance.*
- (C) *If the percent air voids in the compacted pavement is outside the prescribed limits, acceptance and payment will be based upon the schedule outlined in **Item 303.23.COD: Chemical Admixtures, and Item 702.3: Mix Design and Mixing Light Weight Concrete For Structures** of these specifications and addenda thereto.*
- (D) *Regardless of the method of compaction, all rolling shall be completed before the mixture temperature drops below 175 degrees F.*
- (4) **Hand Tamping:** *The edges of the pavement along curbs, headers and similar structures, and all places not accessible to the roller, or in such position that will not allow thorough compaction with the rollers, shall be thoroughly compacted with lightly-oiled hand tamps.*
- (5) **Trench Type Roller:** *Rolling with the trench type roller will be required on widening areas in trenches and other limited areas where satisfactory compaction cannot be "obtained with rollers specified or approached.*

With approval by the OWNER, the vibratory steel wheel roller may be substituted for the 3-wheel roller and tandem roller. Each course, after final compaction, shall have a relative density of not less than 92-percent. The relative density will be determined using Tex-207-F Determining Density of Compacted Bituminous Mixtures and Tex-227-F Theoretical Maximum Specific Gravity of Bituminous Mixtures.

## ITEM 303.COD: PORTLAND CEMENT PAVEMENT

(Page 303-1. Replace **Item 301.1. Description**, with the following. (Paragraph (4) has been added.))

**303.1.COD: DESCRIPTION:** This item shall consist of finished pavement constructed of Portland cement concrete on the prepared subgrade or other base course, in conformity with the plans, as herein specified and as supplemented and/or amended by special provisions and to the lines and grades as established by the OWNER. Concrete shall be considered of satisfactory quality, provided it is:

- (1) Made of materials acceptable to the job and meeting the requirements of **Item 303.2. Portland Cement Concrete Materials (with Addendum Items)**, and special provisions and amendments thereto;
- (2) In the proportions approved by the OWNER; and
- (3) Mixed, placed, finished, and cured in accordance with the requirements of these specifications and any special provisions.
- (4) *All concrete pavement constructed on public thoroughfares shall conform to the provisions and requirements of these specifications.*
- (5) *No concrete shall be placed where the temperature of the mix exceeds 95 degrees Fahrenheit or where the time from being batched to placed exceeds the times shown in Table 303.5.5(a) Concrete Placement of the NCTCOG.*
- (6) *All concrete utilized for street, alley, drive approach and sidewalk pavement shall be batch mixed unless another method is specifically approved by the OWNER.*

(Page 303-2. Replace **Table 303.2.1.1.3.(a) Aggregate Tests**, with the following: (Items C117 and Item D3042 have been added. Additionally, a new paragraph has been added at the end of this Item.))

**Table 303.2.1.1.3.(a).COD: Aggregate Tests**

<b>ASTM Designation</b>	<b>Standard Specification or Standard Test Method (Title)</b>
C29	Bulk Density ("Unit Weight") and Voids in Aggregate
C33	Concrete Aggregate
C40	Organic Impurities in Fine Aggregates for Concrete
C88	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
C117	<i>Materials Finer than 75-<math>\mu</math>m (No. 200) Sieve in Mineral Aggregates by Washing</i>
C123	Lightweight Particles in Aggregate
C125	Terminology Relating to Concrete and Concrete Aggregates
C127	Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
C128	Density, Relative Density (Specific Gravity) and Absorption of Fine Aggregate
C131	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C136	Sieve Analysis of Fine and Coarse Aggregates
C142	Clay Lumps and Friable Particles in Aggregates
C330	Lightweight Aggregates for Structural Concrete

**Table 303.2.1.1.3.(a).COD: Aggregate Tests (Continued)**

<b>ASTM Designation</b>	<b>Standard Specification or Standard Test Method (Title)</b>
C535	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C641	Staining Materials in Lightweight Concrete Aggregates
D8	Terminology Relating to Materials for Roads and Pavements
D75	Sampling Aggregate
D422	Particle-Size Analysis of Soils
D4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
D2217	Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
D3042	<i>Insoluble Residue in Carbonate Aggregates</i>

*Fine aggregate shall be tested for insoluble residue in accordance with ASTM Designation D-3042. The total percent of insoluble residue expressed as a percentage of the total original aggregate sample weight shall not be less than 28.*

(Page 303-3. Replace **Table 303.2.1.2.2.(a) Grading Requirements for Fine Aggregates**, with the following: (The limits for No. 30 Sieve have been changed and the No. 200 Sieve requirements have been removed.))

**Table 303.2.1.2.2.(a).COD: Grading Requirements for Fine Aggregates**

<b>Sieve</b>	<b>Percent Passing by Weight</b>
Passing 3/8" sieve (9.5mm)	100%
Passing No. 4 Sieve (4.75mm)	95 to 100%
Passing No. 8 Sieve (2.36mm)	80 to 100%
Passing No. 16 Sieve (1.18mm)	50 to 85%
Passing No. 30 Sieve (600µm)	<b>25 to 60%</b>
Passing No. 50 Sieve (300µm)	10 to 30%
Passing No. 100 Sieve (150µm)	0 to 10%

(Page 303-3. Add the following:)

**303.2.1.2.5.COD: ADDITIONAL REQUIREMENTS:** *The difference between the percent passing any two consecutive sieve sizes shall not exceed 45%. The fine aggregates shall have a fineness modulus between 2.30 and 3.10. In addition, the fineness modulus of the fine aggregates used in actual concrete production shall not vary more than 0.2 from the average value used in proportioning the mix.*

*The fineness modulus of fine aggregates shall be determined by adding the sum of the accumulated percentages by weight retained on the following sieves and dividing by 100: nos. 4, 8, 16, 30, 50, and 100. When the fineness modulus of the fine aggregate varies by more than 0.2 from the fineness modulus being used in the current design, the batch shall be redesigned before placing concrete.*

(Page 303-4. Replace **Table 303.2.1.3.2.(a) Grading Requirements for Coarse Aggregates**, with the following: (Several Items have changed.))

**Table 303.2.1.3.2.(a).COD: Grading Requirements for Coarse Aggregates**

Sieve No.	Nominal Size (Sieve with Square Openings)	Amounts Finer than Each Laboratory Sieve (Square Opening), Mass Percent													
		100 mm (4 in.)	90 mm (3.5 in.)	75 mm (3 in.)	63 mm (2.5 in.)	50 mm (2 in.)	37.5 mm (1.5 in.)	25.0 mm (1 in.)	19.0 mm (3/4 in.)	12.5 mm (1/2 in.)	9.5 mm (3/8 in.)	4.75 mm (No.4)	2.36 mm (No. 8)	1.18 mm (No. 16)	0.30 mm (No. 50)
1	90 to 37.5 mm (3.5 to 1.5 in.)	100	90 to 100		25 to 60		0 to 15		0 to 5						
2	63 to 37.5 mm (2.5 to 1.5 in.)			100	90 to 100	35 to 70	0 to 15		0 to 5						
3	50 to 25 mm (2 to 1 in.)				100	90 to 100	35 to 70	0 to 15		0 to 5					
357	50 to 4.75 mm (2 in to No. 4)				100	95 to 100		35 to 70		10 to 30		0 to 5			
4	37.5 to 19 mm (2 in. to No. 4)					100	90 to 100	20 to 55	0 to 15		0 to 5				
467	37.5 to 4.75 mm (1.5 in. to No. 4)					100	95 to 100		35 to 70		10 to 30	0 to 5			
5	25.0 to 9.5 mm (1 to 0.5 mm)						100	20 to 55	0 to 10	0 to 5	0 to 5				
56	25 to 9.5 mm (1 to 3/8 in)						100	90 to 100	40 to 85	10 to 40	0 to 15	0 to 5			
57	25.0 to 4.75 mm (1 to No. 4)						100	95 to 100		25 to 50		1 to 10	0 to 5		
6	19.0 to 9.5 mm (3/4 to 3/8 in.)							100	90 to 100	20 to 55	0 to 15	0 to 5			
67	19 to 4.75 mm (3/4 in to No. 4)							100	90 to 100		20 to 55	0 to 10	0 to 5		
7	12.5 to 4.75 mm (0.5 in to No. 4)								100	90 to 100	40 to 70	0 to 15	0 to 5		
8	9.5 to 2.36 mm (3/8 in. to No. 8)									100	85 to 100	10 to 30	0 to 10	0 to 5	
89	9.5 to 1.18 mm (3/8 in to No. 16)									100	90 to 100	20 to 55	5 to 30	0 to 10	0 to 5
g <sup>1</sup>	4.75 to 1.18 mm (No.4 to No. 16)										100	85 to 100	10 to 40	0 to 10	0 to 5

1. Although size 9 aggregate is defined in ASTM C125 Standard Terminology Relating to Concrete and Concrete Aggregates as a fine aggregate, it is included as a coarse aggregate when it is combined with a size 8 material to create a size 89, which is a course aggregate as defined by ASTM C125.

(Page 3203-4. Replace **Item 303.2.2.1. Delivery**, With the following: (New information has been added to the end of this Item.))

**303.2.2.1.COD: DELIVERY:** Cement delivered in bags shall be legibly marked on the bag with brand and name of the manufacturer, shall be in good condition at the time of delivery, and shall contain 94-pounds (43kg) net. Bags of cement varying more than 5-percent from the specified weight may be rejected, and if the average net weight in any shipment, as determined by weighing 50 bags taken at random, is less than 94-pounds (43kg), the entire shipment may be rejected. Cement salvaged from discarded or used bags shall not be used.

Cement delivered in bulk may be used, provided the manner and method of handling is approved by the OWNER. When delivered in bulk, the brand name of the manufacturer contained in the shipping information accompanying the shipment shall be furnished to the OWNER prior to the use of the cement. Bulk cement shall be weighed on approved scales.

Cement from different manufacturers, although tested and approved, shall not be mixed, except as approved by the OWNER.

The CONTRACTOR, when required, shall furnish to the OWNER, with each shipment of cement, a statement as the specific surface of the cement expressed in square-centimeters-per-gram.

**DELIVERY TICKETS:**

For transit mix operations, the manufacturer of the concrete shall, before unloading, furnish to the purchaser with each batch of concrete at the site a delivery ticket on which is printed, stamped, or written, the following information to determine that the concrete was proportioned in accordance with the approved mix design:

- (1) Name of concrete SUPPLIER;
- (2) Serial number of ticket;
- (3) Date;
- (4) Truck number;
- (5) Name of purchaser;
- (6) Specific designation of job (name and location);
- (7) Specific class, design identification and designation of the concrete in conformance with that employed in job specifications;
- (8) Amount of concrete in cubic yards (or cubic meters);
- (9) Time loaded or of first mixing of cement and aggregates;
- (10) Water added by receiver of concrete and his initials;
- (11) Weight of cement;
- (12) Weight of fly ash;
- (13) Type and amount of admixtures;
- (14) Information necessary to calculate the total mixing water added by the producer (total mixing water includes free water on the aggregates, water and ice batched at the plant, and water added by the truck operator from the mixer tank);
- (15) Maximum size of aggregate; and
- (16) Weights of fine and coarse aggregate.

An example of an acceptable delivery ticket and batch weight printout is provided on **Exhibit 303.2.2.1.COD(a): Typical Concrete Batch Delivery Ticket**, attached.

**303.2.2.1.(a).COD: Typical Concrete Batch Delivery Ticket**

For on-site concrete plant operations, the CONTRACTOR shall supply to the OWNER a batch ticket with the following information and for each continuous paving operation, provide receipts and invoices to substantiate the amounts of cement and fly ash used in the placement.

- (1) At the beginning of each day's placement, a list of the actual batch weights to be used shall be given to the OWNER.
- (2) When any changes are made, a new list of weights shall be given to the OWNER.

(Page 303-6. Replace **Item 303.2.4.. Add Mixtures**, with the following:)

**303.2.4.COD: MINERAL ADMIXTURES:** Fly ash may be used in all classes of concrete for paving to replace a portion of the minimum Portland Cement as specified in **Item 303.3.4.2.COD Classes of Pavement Concrete**, with the exception of Class Hand Finish. With approval of the OWNER, fly ash may be used in all classes of structural concrete specified in **Item 303.3.4. Quality of Concrete (with Addendum Items)**, Unless otherwise approved by the OWNER, the maximum cement reduction shall not exceed 20 percent by weight of cement, and fly ash replacement shall be 1.25 pounds, per 1.0 pound of Portland Cement reduction.

Example: Class Machine Finish 4000 PSI paving concrete replacement mix would require a minimum of 451 pounds of Portland Cement, plus  $113 \times 1.25 = 141$  pounds of fly ash. The maximum water-cement ratio is 0.49, thus the maximum total water permitted per cubic yard is; 592 pounds of cementitious material times 0.49 = 290.0 pounds or 34.8 gallons.

The water-cement ratio of the concrete mix shall be based on total cementitious (cement plus fly ash) materials. Proposed concrete mix designs with materials certification data and laboratory or field trial mix test results on the properties of the fresh and hardened concrete shall be submitted to the OWNER for approval. Such data shall be resubmitted for approval when there is a change in materials, or when requested by the OWNER.

The CONTRACTOR, when required by the OWNER, shall furnish laboratory analysis to verify that a fly ash source meets ASTM requirements for C-618 and that "Loss on Ignition" (NCTCOG) requirements shall be a maximum of 3 (three) percent.

Alternate brands and classes of fly ash shall not be substituted in approved concrete mix designs. Equipment and methods for adding fly ash to mixes must be inspected and approved by the OWNER in advance. Transit mix concrete delivered to the job will have a ticket showing the weight of the fly ash and cement for each load. Transit mix concrete deliveries may be rejected unless a complete ticket is presented. For on-site concrete mixing operations, upon completion of the project and before final payment is made, a letter will be required from the SUPPLIER certifying the amount of fly ash and cement which was included in the concrete furnished on the project."

(Page 303-9. Replace **Item 303.2.13.1.1. Membrane-Forming Compounds**, with the following: (Several new sections have been added to the end of this Section.))

**303.2.13.1.1.COD: MEMBRANE-FORMING COMPOUNDS:** The membrane-curing compound shall conform to the requirements of ASTM C309 Liquid Membrane-Forming Compounds for Curing Concrete, Type 2, white pigmented compound, unless otherwise specified or indicated. It shall be of such nature that it shall not produce permanent discoloration of concrete surfaces nor react deleteriously with the concrete. The compound shall produce a firm, continuous uniform moisture-impermeable film free from pinholes and shall adhere satisfactorily to the surfaces of damp concrete. It shall, when applied to the damp concrete surface at the specified rate of coverage, dry to touch in one(1)-hour and dry through in not more than 4-hours under normal conditions suitable for concrete operations. It shall adhere in a tenacious film without running off or appreciably sagging. It shall not disintegrate, check, peel, or crack during the required curing period. The compound shall not peel or pick up under traffic and shall disappear from the surface of the concrete by gradual disintegration. The compound shall be delivered to the job site in the manufacturer's original containers only, which shall be clearly labeled with the manufacturer's name, the trade name of the material and a batch number or symbol with which test samples may be correlated. When tested in accordance with ASTM C156 Water Retention by Concrete Curing Materials, the liquid membrane-forming compound shall restrict the loss of water present in the test specimen at the time of application of the curing compound to not more than 0.55-grams-per-square-centimeter (0.01-oz.-per-in<sup>2</sup>) of surface.

**Cold Pour Silicon Joint Sealant (Alternate Self-Leveling, Ultra-Low Modulus Silicon Joint Sealant)**

- (1) **Description.** The joint sealant shall be Dow Corning 890 SL silicone joint sealant or an approved equal.
- (2) **Properties.** The silicone joint sealant shall exhibit the following properties:

**Table 303.2.13.1.(a).COD: Membrane-Forming Compounds**

<b>As Supplied</b>	<b>Property</b>	<b>Test Method</b>
Color	Dark Gray	
Flow, Sag, or Slump	Self-leveling	
Extrusion Rate, grams per minute	275-550	Mil-S-8802
Percent Solids	96%	
Specific Gravity	1.26 – 1.34	
Skin-over-time, at 25°C (77°F), minutes (maximum)	60	Mil-S-8802 (Mod.)
Cure Time, at 25°C (77°F), Days	14	
Full Adhesion, days	14-21	
<b>As Cured – after 21 days at 25°C (77°F), and 50 percent Relative Humidity</b>		
Elongation, percent minimum	1400	
Joint Modulus, at 50 percent elongation, psi(Kpa) max	7 (48)	ASTM D1412
Joint Modulus, at 100 percent elongation, psi(Kpa) max	8 (55)	ASTM D1412
Joint Modulus, at 150 percent elongation, psi(Kpa) max	9 (62)	ASTM D1412
Adhesion to Concrete, Minimum percent Elongation	+600	ASTM D3583 (Sec. 14 Mod.)
Joint Movement Capacity, +100/-50 percent, 10 Cycles	No Failure	ASTM C719 (Latest Revision)

Sealant shall exhibit no cracking, hardening, or loss of adhesion after 5000 hours of artificial weathering.

When tested in accordance with Water Retention by Concrete Curing Materials, ASTM Designation C 156, the liquid membrane-forming compound shall restrict the loss of water present in the test specimen at the time of application of the curing compound to not more than 0.3 grams per square centimeter of surface.

(Page 303-10. Replace **Item 303.2.14.1.2. Ready-Mixed Cold-Applied**, with the following:)

**303.2.14.1.2.COD: COLD POUR JOINT SEALANT:**

- (1) **Description:** The sealant shall be a single component polymer modified asphalt emulsion meeting the material specification detailed herein below:

The emulsified asphalt shall be an anionic or cationic type asphalt emulsion and shall be modified with polymer, and must be smooth and homogenous with no evidence of polymer separation during storage for at least six months. The distillation\* or evaporation\*\* residue of the modified emulsion shall contain a minimum of 10 percent polymer by weight.

Testing shall be performed in accordance with Texas Department of Transportation, Materials and Tests Division, Test Method TEX 525C.

\*The standard distillation procedure shall be modified as follows:

The temperature on the lower thermometer shall be brought slowly to 350°F ± 10°F and maintained at this point for 20 minutes, with complete and total distillation in 60 minutes ± 5 minutes from the first application of heat.

*\*\*Some polymer modified asphalt emulsion sealants do not lend themselves well to the distillation procedure. The residue of these materials may be obtained by the following evaporation procedure:*

*Weigh 200g of the sealant into a flat bottom pan having a diameter of 5 inches ± 1 inch and a height of 3.5 inches ± 0.5 inch. Evaporate on a hot plate with constant stirring until the material is water free. The temperature shall be controlled to not exceed 350°F.*

(2) **Properties:** *In addition, the emulsion sealant shall comply with the following requirements:*

**Table 303.2.14.1.2.(a).COD: Cold Pour Joint Sealant Requirements**

Property	Test Method	Required Result	
		Minimum	Maximum
Viscosity <sup>1</sup> , Brookfield, at 77°F	ASTM D2196 Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer; Method A	6000 Centipoises	10,000 Centipoises
Storage Stability Test, One-Day	AASHTO T59	--	1 – Percent
Particle Charge Test	Cationic Type Anionic Type	Positive Negative	--
Sieve Test	Percent retained on No. 200 Sieve	--	0.10 - Percent
Distillation or Evaporation	Residue	65 - Percent	--
<b>Tests on Residue from Distillation or Evaporation</b>			
Residue	See Note 2.	60 – Percent	--
Penetration test on Residue, 77°F, 100g, 5 seconds - 60 mm	AASHTO T49	35 (0.1 – mm)	75 (0.1 – mm)
Softening Point, R&B	AASHTO T53	140	--
Ductility test on Residue, 39.2°F, 5 cm/Min	AASHTO T51	100 - cm	--

1. OWNER May require Viscosity Profile in Lieu of single-spindle viscosity test, in which case the apparent viscosity shall be 10,000.

2. Residue may be obtained by the following evaporation procedure: Mass 200g of sealant into a 1000-ml beaker or a 1-quart can and place in a heating mantle designed for a 1000-ml beaker. During the evaporation the sealant should be stirred frequently to prevent foam-over or local overheating. The temperature shall be maintained between 260°F and 300°F (125°C and 150°C) for 3- to 5-minutes after the material is water free. Pour required specimen.

(3) **Tests:** *In addition, the emulsion sealant shall comply with the following test requirements:*

**Preparation:** *Preparation for Adhesion, Cohesion, Self-Healing and Freeze Tests: The material shall be poured into standard concrete mortar blocks with a closed polyethylene backer rod set at a depth of 3/8" below surface of blocks. The blocks shall have a spacing of 1/4" apart. The sealant shall be poured level with the surface of the concrete blocks. Tests to be performed on samples after fourteen day cure time (or until liquid component has evaporated). Tests run at 77°F. ± 2°F. Five cycles with the same sample.*

**Extension and Bonding Test:** *There shall be no cracking of the material or failure in bond between the material and the mortar test blocks during or at the end of five cycles. The sealant must display the following properties:*

**Table 303.2.14.1.2.(b).COD: Adhesion, Cohesion, and Resilience**

<b>Test</b>	<b>Parameter</b>	<b>Results</b>
Adhesion – at 77°F	With Extension of 300%	No Failure
Cohesion - at 77°F	With Extension of 300%	No Failure
Resilience	(60 minutes)  Self-Healing	60% Recovery  Return sample in apparatus to initial position and repeat test after 20 min. Rest. Repeat for five cycles.

**Self-Leveling:** Sealant shall be self-leveling.

**Adhesion or Cohesion:** There shall be no failure in adhesion or cohesion when tested to 300% extension with recovery of 60% at the end of 60 min.

**Freeze Test:** The sealant must display the following properties: Freeze sample in blocks to zero°F for four hours. Pull blocks at 1/8"/hour at 0°F with extension of 50%. Repeat three cycles.

(Page 303-12. Replace **Item 303.3.4.2. Standard Classes**, with the following:)

**303.3.4.2.COD: STANDARD CLASSES OF PAVEMENT CONCRETE:** Unless otherwise shown on the plans or detailed specifications, the Standard Classes of Pavement Concrete shown in **Table 303.3.4.2.(a).COD: Standard Classes of Pavement Concrete** shall be used.

Streets, alleys, drive approaches, sidewalks, and inlets shall be constructed in accordance with these specifications using the classes of concrete, machine or hand finished, whichever is appropriate. Mass pour medians, noses, and islands shall use hand-finished concrete.

The testing does not in any way change the penalties imposed on the CONTRACTOR for deficient strength outlined elsewhere in these specifications.

**Table 303.3.4.2.(a).COD: Standard Classes of Pavement Concrete**

<b>Class of Concrete</b>	<b>Minimum Cement Content Per Cubic Yard.</b>		<b>Minimum Compressive Strength 28-day, PSI</b>	<b>Maximum Water / Cement Ratio</b>	<b>Range Slump (Inches)</b>
	<b>Pounds</b>	<b>Sacks</b>			
Machine Finish	564	6.0	4,000	0.49	½" to 4"
Hand Finish	611	6.5	4,500	0.45	3" to 5"
Sidewalks and 4 inch thick median pavement	470	5.0	3,000	0.58	3" to 5"
Miscellaneous Concrete	As Directed by OWNER or as shown on the plans				

**NOTES:**

- (1) Fly ash may be used to replace a portion of the minimum cement in accordance with 303.2.4.
- (2) Grade No. 1 Coarse aggregate shall not be used for pavement concrete.
- (3) The maximum water/cement ratio, in pounds per pound, will be computed based on total cementitious material.
- (4) Entrained air will be required. The concrete will be designed to entrain 5 percent air when Grade 2 Coarse Aggregate is used, 6 percent when Grade 3 Coarse Aggregate is used, and 7 percent for Grade 4 unless otherwise specified by the OWNER. Concrete as placed shall contain the proper amount of air as required herein with a tolerance of plus or minus 1.5 percent. Entrained air shall conform to **Item 303.2.3. Chemical Admixtures**.

(Page 303-14. Add the following:)

**303.3.6.COD: CEMENT USED ON PUBLIC PROJECTS - SUSTAINABLE AIR QUALITY:**

- (1) Pursuant to Section 271.907 of the Texas Local Government Code, as amended, the purpose of this Item is to provide a material standard for Portland cement to be purchased or used by the CONTRACTOR in connection with the Project. This Item applies to all product or material applications manufactured or mixed with Portland cement, whether the product or material is batched or prepared on or off the Project site, including but not limited to concrete for structural or nonstructural purposes, drywall, mortar for bricks, block, or stone, or other similar uses. It has been determined that Portland cement manufactured by means of a dry kiln process results in substantial reductions in emissions of nitrogen oxides (NOx). In the interest of improving the quality of the air in the City of Dallas and throughout the North Texas nonattainment area, the City of Dallas determines that it is in the public interest for the CONTRACTOR to obtain and use this type of Portland cement during construction of the Project.
- (2) The CONTRACTOR will use during the construction of the Project and include the cost in its price for the base bid, or in the applicable unit prices of the base bid for concrete and other products that utilize Portland cement, only concrete or other products or materials that contain Portland cement manufactured by means of a dry kiln process. For purposes of this paragraph, the term "dry kiln process" means the process in which the admixture of raw materials used to make Portland cement are mixed or ground into a dry powder for heating in the kiln without the addition of any extraneous water or other liquid material. The CONTRACTOR shall also separately itemize in the Bid in the space provided in the Bid sheet, for the information and benefit of the OWNER, the price of the concrete or other product that utilizes Portland cement manufactured by means of a dry kiln process. Failure to use Portland cement manufactured through a dry kiln process as required above shall render the bid nonresponsive.
- (3) As an alternate to the base bid, the CONTRACTOR will also be required to state the price (as an addition or a deduction to the base bid price or to the applicable unit prices for concrete and other products that utilize Portland cement) of any products or materials to be furnished that contain Portland cement manufactured by means other than the dry kiln process. An item is contained in the Bid sheet for the alternate. All blanks provided in the Bid alternate, along with the statement as to whether the amount is an addition to or a deduction from the base bid, shall be filled in by the CONTRACTOR. If the OWNER accepts the alternate as part of the award, then Subsection D. below shall not apply. Nothing in this Subsection shall be construed to require the OWNER to accept any alternate submitted.
- (4) When any load or item of Portland cement, concrete, or other product which contains Portland cement is delivered to the Project site for use, the CONTRACTOR shall obtain and present to the OWNER a sworn-to certification, using a certification form approved by the OWNER, from the Portland cement or concrete manufacturer that the load or item delivered contains no Portland cement other than Portland cement made through a dry kiln process. The CONTRACTOR shall also obtain a manifest for each Portland cement or concrete load showing the quantity of Portland cement or concrete delivered and the location of the manufacture of the Portland cement, along with the name of a designated representative of the Portland cement manufacturer for purposes of contact by the OWNER if necessary. On a monthly basis or other frequency desired by the OWNER, the CONTRACTOR shall furnish for inspection by the OWNER of a copy of the delivery manifests obtained. The CONTRACTOR shall certify in writing that the manifests are true and correct to the best of the CONTRACTOR'S knowledge. Notwithstanding the manufacturer's certification, the CONTRACTOR will be held responsible in the event the OWNER discovers that the cement used was not manufactured through a dry kiln process.
- (5) The OWNER reserves the right to pursue any remedies it has under the CONTRACT Documents in the event the CONTRACTOR fails to comply with this materials specification, including but not limited to termination of the CONTRACT, adverse evaluation at final completion of the CONTRACT, or debarment from participation in future construction contracts the OWNER may advertise or award. The OWNER also reserves the right to reject any load or item of Portland cement, concrete, or other product containing Portland cement delivered in the event it is discovered that the Portland cement used in the load or item was not manufactured through a dry kiln process.
- (6) Preference: Pursuant to Section 271.907 of the Texas Local Government Code, as amended, the OWNER will give a preference to the Bid of a CONTRACTOR who certifies in the Bid that, in the purchase of concrete or other products using Portland cement in construction of the Project, it is utilizing Portland cement from a manufacturer who manufactures the cement through a dry kiln process that generates average NOx emissions of not greater than 1.7 pounds of NOx per ton of clinker produced, based upon NOx emissions information furnished to the Texas Commission on Environmental Quality for the 12 months prior to the date of the bid opening during which emissions data is available. The preference shall apply only to the extent that the CONTRACTOR'S Bid, as certified, is not greater than 105 percent of the lowest responsible Bid of a CONTRACTOR who does not or cannot certify that it will utilize Portland cement from a cement kiln meeting the above-mentioned emission standard. The CONTRACTOR shall also separately itemize in the Bid in the space provided in the Bid sheet, for the information and benefit of the OWNER, the

*price of the concrete or other product that utilizes Portland cement manufactured at a kiln that meets the above-mentioned standards. The OWNER reserves the right to pursue any remedies it has under the CONTRACT Documents in the event the CONTRACTOR falsely certifies to the requirements stated above, including but not limited to termination of the CONTRACT, adverse evaluation at final completion of the CONTRACT, or debarment from participation in future construction contracts the OWNER may advertise or award. The OWNER also reserves the right to reject any load or item of Portland cement, concrete, or other product containing Portland cement delivered in the event it is discovered that the Portland cement used in the load or item was not manufactured as certified.*

(Page 303-15. Replace **Item 303.4.1.General**, with the following:)

**303.4.1.COD: GENERAL:** *All equipment necessary for the construction of this item shall be on the project and shall be field checked by a trial run by the CONTRACTOR and observed by the OWNER before its use in the actual construction operations on which the equipment is to be used. The resulting product must comply with the project specifications.*

*The CONTRACTOR shall have on site the following standard finishing tools when paving streets and slabs wider than ten feet: the ten foot wide "Straight Edge", the ten foot wide "Sentem", and other miscellaneous standard equipment used in the placing and finishing of concrete pavements*

(Page 303-15. Replace **Item 303.4.5. Mechanical Vibratory Equipment**, with the following: (The first paragraph has been replaced.))

**303.4.5.COD: MECHANICAL VIBRATORY EQUIPMENT:** *All concrete placed as Machine Finish class concrete shall be consolidated by approved mechanical vibrators attached to the machine, operated ahead of the transverse finishing screen, and designed to vibrate the concrete internally. Unless otherwise shown on the plans, vibrators of the surface-pan type may also be used for full-depth placement provided that internal vibrators fixed to the machine are also used for vibrating the concrete internally. Vibratory members shall extend across the pavement practically to, but shall not come in contact with, the side forms. Mechanically-operated vibrators shall be mounted in such manner as not to interfere with the transverse or longitudinal joints.*

The internal-type vibrators shall be spaced at not more than 24-in. (61cm) and shall be equipped with synchronized vibratory units. Separate Vibratory units shall be spaced at sufficiently close intervals to provide uniform vibration and consolidation to the entire width of the pavement. The frequency in air of the internal spud-type Vibratory units shall be not less than 8,000-cycles-per-minute and not less than 5,000-cycles-per-minute for tube types. The method of operation shall be as directed by the OWNER. The CONTRACTOR shall have a satisfactory tachometer available for checking the vibratory elements.

The pavement vibrators shall not be used to level or spread the concrete but shall be used only for purposes of consolidation. The vibrators shall not be operated where the surface of the concrete, as spread, is below the elevation of the finished surface of the pavement, except for the first lift of concrete where the double strike-off method of placement is employed. The vibrators shall not be operated for more than 15-seconds while the machine upon which they are installed is still.

The pan-type vibrator units shall apply the vibrating impulses directly to the surface of the concrete. The operating frequency shall not be less than 3,500-cycles- nor more than 4,200-cycles-per-minute in air. The CONTRACTOR shall have a satisfactory tachometer available for checking the speed of the vibratory elements.

Approved hand manipulated mechanical vibrators shall be furnished in the number required for provision of proper consolidation of the concrete along the forms, at joints and in areas not covered by mechanically controlled vibrators. These vibrators shall be sufficiently rigid to insure control of the operating position of the vibrating head.

Complete and satisfactory consolidation of the concrete pavement is a most important requirement of this specification. Cores taken as required by **Item 303.8. Pavement Testing and Evaluation (with addendum Items)** shall be carefully examined for voids, honeycombing or other evidence of incomplete consolidation. If such evidence is present, changes in the consolidation procedures and/or equipment shall be made to insure satisfactory consolidation.

(Page 303-15. Replace **Item 303.4.6. Vibrating Screed**, with the following: (Two new sentences have been added.))

**303.4.6.COD: VIBRATING SCREED:** *The vibrating screen may be used for Hand Finish class concrete placement for pavement. The mechanically vibrated screed shall be provided with a template adjusted to the crown of the concrete section. The template shall be power vibrated, adjustable in height and mounted to ride on the forms. The mechanical vibration of one of the screeds on the transverse finishing machine specified in **Item 303.4.7.COD Transverse Finishing Machine**, shall be acceptable. Approved hand manipulated mechanical vibrators shall be used with the vibrating screen in the number required for internal vibration and proper consolidation of the pavement.*

(Page 303-15. Replace **Item 303.4.7. Transverse Finishing Machines**, with the following: (The first paragraph has been replaced.))

**303.4.7.COD: TRANSVERSE FINISHING MACHINE:** *The transverse finishing machine may be used for Machine Finish class concrete placement for pavement provided that internal vibrators fixed to the machine are also used for vibrating the concrete internally. The requirements for fixed internal vibrators given in part **Item 303.4.5.COD Mechanical Vibratory Equipment**, shall apply. The transverse finishing machine shall be provided with two screeds accurately adjusted to the crown of the pavement, shall be power driven, and mounted in a substantial frame equipped to ride on the forms. The machine shall be so designed and operated as to strike off and consolidate the concrete internally with internal-type vibrators as required in part **Item 303.4.5.COD Mechanical Vibratory Equipment**.*

Finishing machines shall be maintained in a tight and good operating condition, accurately adjusted to the required crown or profile and free from deflection, wobble, or vibration tending to affect the surface finish. Machines failing to meet these requirements shall be rejected by the OWNER, and the CONTRACTOR shall provide approved equipment.

(Page 303-17. Replace **Item 303.5.4.3. Construction Joints**, with the following:)

**303.5.4.3.COD: CONSTRUCTION JOINTS:** *Contraction, or sawed dummy joints, shall be installed at the locations and at the intervals shown on the plans and standard construction details after placement of the curing membrane. The joints shall be constructed by sawing to a 1/4th inch (6mm) width and to the depth indicated on the plans and in accordance with **Item 402.3. Sawing**. Joints shall be sawed into the completed pavement surface as soon after initial concrete set as possible and after the sealing operation to control cracking; but with enough elapsed time to prevent aggregate from being dislodged and to prevent any damage by blade action to the slab surface and to the concrete immediately adjacent to the joint. If sawing causes a crack to occur in the placement surface, sawing shall be discontinued at that location and sawing of the remaining dummy joints shall continue. Any portion of the curing membrane that has been disturbed by sawing operations shall be restored by spraying the areas with additional curing compound. The following sawing schedule table shall be used in relation to the average of the concrete and air temperature at the time of placement:*

REQUIRED CONCRETE DUMMY JOINT SAW SCHEDULE	
Average of Concrete and Air Temperature (°F)	Permitted Elapsed Time After Placement Prior To Sawing (Hrs.)
40 to 49	10 + 1
50 to 59	8 + 1
60 to 69	7 + 1
70 to 79	6 + 1
80 to 89	5 + 1
90 or Greater	4 + 1

*The sawed groove shall be thoroughly cleaned for the full depth and width of the joint and filled with Ready-mixed cold-applied joint sealer as specified in **Item 303.5.4.7.COD Joint Sealing**, as amended. The type of equipment and method for performing this work shall be as provided for in **Item 303.5.4.7.COD Joint Sealing**, as amended*

(Page 303-18. Replace the entire **Item 303.5.4.7. Joint Sealing**, with the following: (The original information for this item has been kept; however, the Item has been significantly expanded.))

**303.5.4.7.COD: JOINT SEALING:** Routine pavement joints shall be filled to a depth of 1½-in. (3.8cm). Materials shall generally be handled and applied according to the manufacturer's recommendations, with additional requirements as stated herein.

**303.5.4.7.1.COD: HOT POURED POLYMER:** The sealing filler shall be melted in an approved oil-batch kettle with continuous mechanical agitation. The kettle shall be equipped with temperature indicators. The OWNER shall determine the optimum temperature for proper pouring fluidity, and the CONTRACTOR shall maintain the material within close range of optimum temperature. At no time shall the temperature exceed 450°F (232°C). Joint sealing compound shall not be poured at atmospheric temperatures below 32°F (0°C).

**303.5.4.7.2.COD: READY-MIXED COLD-APPLIED:** Permeation of joints shall principally be achieved without the task of squeegeeing. However, squeegeeing is recommended to assist permeation and to allow sealant to become rapidly tack-free. Sealant shall "set" in a fixed position within 40-minutes after application, to where traffic may be restored to the pavement without the effects of "tracking." "Tracking" shall be averted without the use of topping materials such as sand.

**303.5.4.7.3.COD: MISCELLANEOUS JOINT SEALING PROCEDURES:** *(Joints which are not expansion joints.) All remaining joints that are not expansion joints shall be sealed in accordance with the following requirements:*

(A) **DESCRIPTION:** *This item shall govern the cleaning, preparation and sealing of all types of joints other than expansion joints in Portland cement concrete pavements as set forth in the plans, as required by the construction sequencing, and as directed by the OWNER.*

(B) **MATERIALS:** *All materials used in the construction of joints and joint sealing shall conform to the applicable sections of Division 2. Joint sealants shall be a single component polymer modified asphalt emulsion conforming to the requirements of **Item 303.2.14.1.2.COD Ready Mixed Cold Applied Joint Sealant**, as amended.*

(C) **MATERIAL STORAGE AND DISPOSAL:** *Cold pour sealant and other materials that become a part of the final product shall be furnished by the CONTRACTOR. In addition, all incidental materials, fuel solvents and other items shall also be provided by the CONTRACTOR. The CONTRACTOR shall locate and furnish a storage area and shall be responsible for the proper storage of sealing material. Sealing materials shall be delivered to the job sites in clean, sealed, original containers bearing the manufacturer's name, material type, lot number, and special handling instructions that apply. At the conclusion of work, all materials, containers, equipment, and incidentals shall be removed by the CONTRACTOR. The lawful disposal of barrels and other containers shall be the responsibility of the CONTRACTOR. Disposal shall take place in a timely manner and in accordance with the latest Environmental Protection Agency (EPA) or Texas Commission on Environmental Quality (TCEQ) requirements.*

(D) **EQUIPMENT:** *The CONTRACTOR shall furnish in good working condition all equipment, tools, and machinery necessary to satisfactorily complete the work and shall maintained all such equipment, tools, and machinery in good condition during the course of the work without excessive delays for repairs and replacements. Equipment used for cold pour sealing shall meet the following minimum requirements:*

(1) **Cleaning Equipment:** *Equipment utilized for cleaning joints shall be capable of delivering compressed air of sufficient volume and force to remove all loose debris from joints to the depth shown on the plans. At least one (1) hand-held pressurized wand per crew shall be provided by the CONTRACTOR for the sole purpose of joint cleaning. The air compressor shall be capable of delivering at least 100 CFM at 100 psi at the compressor and shall be equipped with an oil and moisture trap to remove contamination from the compressed air. Proper operating pressure for this equipment will be determined by the OWNER. When sealing joints older than one day, the joints shall be routed with a concrete routing saw, in good working condition, capable of routing and cleaning the sides of the joints for the full depth of the joints. CONTRACTOR shall provide dust control methods to assure that dust and debris are captured and adhere to the TCEQ air-borne contamination requirements.*

(2) **Cold Pour Sealing Equipment for Joints:** *Equipment utilized for cold pour sealing shall consist of:*

- a. *Not less than two (2) pressure-fed hand-held wands per crew and;*
- b. *A barrel pump or pressurizing system to provide a continuous and uninterrupted flow of sealant through the hoses to the wands.*

*The CONTRACTOR shall also provide any special equipment required to install backer rod for joint sealing. Sealing equipment shall meet the approval of the OWNER.*

(E) **CONSTRUCTION METHODS:**

(1) **Presence of Manufacturer's Representative Required.**

*Manufacturer's representative shall be present at the beginning of the sealing operations to meet with the contractor, OWNER, and inspector to establish correct procedures. Contact*

manufacturer's representative 48 hours prior to installation of joint sealant at the phone number provided in the Standard Construction Details, File 251D-1, sheet 1003.

(2) **Application:**

- a. Sealant must be able to be applied to fresh damp concrete and withstand immersion in water after curing.
- b. Sealant may be applied immediately following the contraction joint sawing operation. After sawing, joints shall be blown clean with high-pressure air, backer rod installed and sealed immediately.
- c. Water shall be diverted while sealant is applied and curing.
- d. At least 24-hour cure time is required after application before sealed joints can be exposed to traffic.
- e. If the CONTRACTOR elects to seal the joints more than four hours after the contraction joint sawing operation, the following procedure must be followed:

The walls of all joints shall be cleaned so that the surfaces of the joints do not have foreign material preventing the sealant from adhering to the walls. This shall be done by back sawing and high-pressure air. All joints shall be routed with a concrete routing saw for the full depth of the joint. After the back sawing operation is completed, the street shall be immediately swept clean of all mud, aggregate, and debris. The joints shall then be immediately cleaned thoroughly with high-pressure air (100 CFM with at least 100 psi pressure), the backer rod installed and the joints sealed. Joints not sealed within 8 hours of cleaning shall be re-cleaned using the above method and sealed. The method to be used must first be approved by the OWNER.

- (1) **Contraction Joints:** Sealant shall be applied on top of an extruded closed-cell polyethylene foam backer rod that shall be inserted into the joint with the top of the backer rod no more than 3/8" below the pavement surface. The backer rod shall be at least 1/8" larger in diameter than the width of the joint to provide positive blockage. The backer rod shall be placed in the joint at a depth not to exceed, the width by more than 1 to 1-1/2 to create a uniform reservoir for the sealant. The backer rod shall be placed immediately after air blasting and before placing the sealant.

The backer rod shall be installed with a properly sized backer rod tool to prevent damaging the rod and to insure rod is placed at the proper depth. The nozzle of the application wand shall be inserted into the joint and sealant shall be applied so that air will not be trapped over the backer rod. Sealant shall be applied to the full 1/4" width of the sawed joints to a depth of at least 1/4" thick but not more than 3/8" thick after curing. The sealant shall fill the joint to the surface of the pavement. Care shall be taken to prevent overfilling the joint. After curing, the sealant shall be within 1/8" to 1/4" of the surface in the center of the joint.

- (2) **Construction Joints:** Construction joints shall consist of a butt joint with a reservoir for the sealant to a width of 3/8" and a depth of T/4 created by sawing or hand tooling. The backer rod shall be set to a depth of 1/2" below the surface of the pavement. The reservoir shall be filled with sealant level to the surface of the pavement.
- (3) **Resealing Old Joints:** The joints are to be routed full depth with a concrete routing saw and cleaned with compressed air. Backer rod will be inserted and sealant applied per paragraph (1) above.

(3) **Precautions:**

- a. Avoid applying sealant when rain or other sources of water are expected to come into contact with the freshly applied sealant. Normally, the sealant will be protected from damage after a 2-hour cure period.
- b. The sealant shall not be applied in temperatures below freezing unless the joints are preheated to prevent freezing of the sealant until sufficient cure time has elapsed.
- c. Sealant shall be stored at a temperature not less than 40°F, nor more than 120°F.

(4) **Clean up:**

- a. The equipment and tools can be cleaned by flushing with mineral spirits or diesel oil to remove any built-up sealant. Flush out all cleaning materials before next sealing operation. This is normally done by placing the wand in a bucket and running sealant until the material is not contaminated.

- b. *Spills, drips, or puddles shall be removed as directed by the OWNER. Removal can be assisted by blotting spills as they occur.*
- (A) **Description:** *This item shall govern the cleaning, preparation and sealing of all types of joints in Portland cement concrete pavements as set forth in the plans, as required by the construction sequencing, and as directed by the OWNER.*
- (B) **Materials:** *All materials used in the construction of joints and joint sealing shall conform to the applicable sections of Division 2. Redwood filler material shall be used in the construction of expansion joints. Joint sealants shall be a single component polymer modified asphalt emulsion conforming to the requirements of 303.2.14.1.2. "Ready Mixed Cold Applied" Joint Sealant as amended*
- (C) **Material Storage and Disposal:** *Cold pour sealant and other materials that become a part of the final product shall be furnished by the CONTRACTOR. In addition, all incidental materials, fuel solvents and other items shall also be provided by the CONTRACTOR. The CONTRACTOR shall locate and furnish a storage area and shall be responsible for the proper storage of sealing material. Sealing materials shall be delivered to the job sites in clean, sealed, original containers bearing the manufacturer's name, material type, lot number, and special handling instructions that apply. At the conclusion of work, all materials, containers, equipment, and incidentals shall be removed by the CONTRACTOR. The lawful disposal of barrels and other containers shall be the responsibility of the CONTRACTOR. Disposal shall take place in a timely manner and in accordance with the latest Environmental Protection Agency (EPA) or Texas Commission on Environmental Quality (TCEQ) requirement.*

(Page 303-18. Add the following Item:)

**303.5.4.7.4.COD: EXPANSION JOINT AND ALTERNATE JOINT SEALING PROCEDURES:** *The following joint sealing procedure using **Item 303.5.4.7.3.COD Miscellaneous Joint Sealing Procedures (with Addendum Items)**, shall be used for the sealing of all expansion joints in concrete pavement when joint sealing is specified in the plans and specifications. This joint sealant and procedure may also be used as an alternate to **Item 303.5.4.7.3.COD Miscellaneous Joint Sealing Procedures (with Addendum Items)**, for sealing all other joints in concrete pavements. All other provisions of **Item 303.5.4. Joints (with Addendum Items)**, not specifically changed shall apply.*

- (A) **DESCRIPTION:** *The item shall govern the cleaning, preparation and sealing of all types of joints of Portland cement and concrete pavements as set forth in the plans, as required by the construction sequence and as directed by the OWNER.*
- (B) **MATERIALS STORAGE AND DISPOSAL:** *The sealant for joint sealing shall be Cold Pour Silicone Joint Sealant as specified in **Item 303.5.4.7.3.COD Miscellaneous Joint Sealing Procedures (with Addendum Items)**, and other materials that become part of the final product shall be furnished by the CONTRACTOR. In addition, all incidental materials, fuel solvents and other items shall also be provided by the CONTRACTOR. The CONTRACTOR shall locate and furnish a storage area and shall be responsible for the proper storage of sealing material. Sealing materials shall be delivered to the job sites in clean, sealed original containers bearing the manufacturer's name, material type, lot number, and special handling instructions that apply. At the conclusion of work, all materials, containers, equipment, and incidentals shall be removed by the CONTRACTOR.*

*The lawful disposal of barrels and other containers shall be the responsibility of the CONTRACTOR. Disposal shall take place in a timely manner and in accordance with the latest Environmental Protection Agency (EPA) or Texas Commission on Environmental Quality (TCEQ) requirements. Redwood filler shall be required in all expansion joints as provided in the Standard Construction Details, file 251D-1, as amended.*

- (C) **EQUIPMENT:** *The CONTRACTOR shall furnish in good working condition, all equipment, tools, and machinery necessary to satisfactorily clean the joints and complete the work and shall maintain all such equipment, tools and machinery in good condition during the course of the work without excessive delays for repairs and replacement. Equipment used for applying the silicone joint sealant shall meet the following requirements:*

*The CONTRACTOR shall also provide any special equipment required to install backer rod for joint sealing. The sealing equipment shall meet the approval of the OWNER. Other materials that become part of the product shall be furnished by the CONTRACTOR.*

- (1) **Cleaning Equipment:** *Air compressor will be used to provide air to the sand blasting equipment as well as the final blowing of the joint. The air compressor shall be capable of delivering 100 CFM or more, at 100 psi. Additionally, the air compressor shall be equipped with an oil and moisture trap to remove all contaminants from the compressed air prior to entering the sandblaster or blow out tube. If the concrete slurry has been allowed to dry in the joints, a saw shall be run down the length of the joints to break up and remove the dried slurry prior to the sand blasting and final blowing operation.*

CONTRACTOR shall provide dust control methods to assure that dust and debris are captured and adhere to the TCEQ air-borne contamination requirements.

- (2) **Cold Pour Sealing Equipment:** Cold pour equipment utilized for applying the silicone joint sealant, shall consist of an air-powered pump specifically designed for the purpose of dispensing single-component, moisture cured sealants. The pump shall be capable of delivering sufficient quantities of material to provide speedy and accurate sealing of the joints. The pump manufacturer shall be recommended by the sealant SUPPLIER. Sealing equipment shall meet the approval of the OWNER.

**(D) CONSTRUCTION METHODS.**

- (1) **Application:** The sealant shall be applied to dry and clean joints. Unless otherwise agreed to by the manufacturer, a minimum of seven (7) days curing of the concrete shall occur before the joint sealant is installed.
- (2) **Water Cooled Saws:** If water-cooled saws are used for jointing the concrete, the resulting slurry shall be washed out of the joint within ten minutes of the sawing operation. If dry saws are used, the residue shall be blown out of the joint with high-pressure air within two hours of sawing. The joints should be allowed to thoroughly dry. Immediately prior to the sealing operation, the joints shall be sand blasted.

The sand blast wand shall be equipped with a guide to position the nozzle within two inches of the concrete surface and direct the blast stream into the joint. The joint shall be sand blasted twice, each pass at approximately a 45 angle along each face of the joint. After sand blasting, the joints shall be blown clean with filtered (oil and moisture-free) air. Immediately prior to installing the backer rod, the CONTRACTOR shall notify the OWNER for inspection and approval of the joints. If contamination is present, the joints shall be re-cleaned. Following approval by the OWNER, the backer rod shall be installed to the depth recommended by the manufacturer and the silicone sealant applied per the manufacturer's recommendations. Installation of the backer rod shall require removal of redwood filler to a depth of at least 1 1/4 inches for 1/2 inch wide standard paving expansion joints. The top or the backer rod shall be placed 1/2 inch below the surface of the concrete. A 1/4 inch thick layer of sealant shall be applied on top of the backer rod and a 1/4 inch recess shall be provided from the surface of the concrete at the joint to the top of the sealant material. Backer rod shall be closed cell polyethylene, compatible with cold applied sealants and shall be at least 1/8 inch larger in diameter than the width of the joint. The minimum temperature for applying sealant is 40oF. The pavement may be opened to traffic immediately after the sealing operation is completed.

CONTRACTOR shall provide dust control methods to assure that dust and debris are captured and adhere to the TCEQ air-borne contamination requirements. Containment and extraction methods for controlling the run-off from sawing operations must be submitted by the CONTRACTOR, to the OWNER, for approval prior to any concrete saw cutting is scheduled.

(Page 303-19. Replace **Item 303.5.5.2. Weather Conditions**, with the following:)

**303.5.5.2.COD: WEATHER CONDITIONS:** All concrete shall be placed, finished, and cured in conformance with the intent of the Standard Specifications as amended by the OWNER. Fresh concrete shall be protected from freeze/thaw damage for at least three calendar days after the placement.

Except by specific written authorization of the OWNER, no concrete shall be placed during detrimental weather conditions or when weather conditions indicate that detrimental weather conditions may exist within 24 hours of the placement. Detrimental weather conditions shall be considered to exist when any one of the following weather conditions occur:

- (A) The air temperature is less than 40° Fahrenheit (4°C);
- (B) During rainfall or other precipitation sufficient to potentially cause damage to the work or the concrete surface;
- (c) The conditions of wind, humidity, ambient temperature, and concrete temperature create a condition whereby surface moisture evaporation may exceed 0.2 lb. per square foot per hour as discussed in **Item 303.5.7. Curing (with Addendum Items)**, of these amended Standard Specifications.

The air temperature shall be taken in the shade away from artificial heat.

To secure written authorization to place concrete during potential detrimental weather conditions the CONTRACTOR shall submit his request in writing to the OWNER in advance of the placement of concrete pavement together with the CONTRACTOR'S proposed materials, devices and methods that he will use to protect the concrete placement during the detrimental weather conditions. For detrimental weather condition (c) above, the proposal must be in compliance with **Item 303.5.7. Curing (with Addendum Items)**, of these amended Standard Specifications.

For detrimental weather condition (A) above, the proposal must insure that the fresh concrete after mixing is protected during transport, placement, finishing and early curing in such a way as to maintain the temperature of the air surrounding the fresh concrete at not less than 50° Fahrenheit (10°C) for a period of at least five calendar days

after the placement of the concrete pour. The proposed materials and devices must be on site before the authorization from the OWNER will be given. An additional four cylinders of concrete test specimens shall be made with each set of cylinders made during the placement. These additional test specimens shall be kept on the site exposed to the same conditions as the concrete placement. Equipment and material loads will not be allowed on the placement until compressive test breaks of these specimens indicate that the concrete has reached sufficient strength to bear the loads.

No additional compensation will be provided to the CONTRACTOR for the costs necessary to comply with these requirements for placing concrete in detrimental weather conditions, but all such costs shall be considered incidental to the pay items provided.

It is to be distinctly understood that the CONTRACTOR is responsible for the quality and strength of the concrete placed under any weather conditions. No concrete shall be placed on a frozen subgrade.

(Page 303-19. Replace **Item 303.5.6. Finishing**, with the following: (New information has been added at the beginning of this Item.))

**303.5.6.COD: FINISHING:**

**Finishing of Concrete Pavement And Pavement Leaveouts:** Machine and hand finish classes of concrete shall be consolidated with approved mechanical vibrators designed to vibrate and consolidate the concrete internally. Concrete base and pavement in the following instances will be required to be finished mechanically with approved power-driven machines: streets wider than 27 feet, divided streets, and major thoroughfares.

Care shall be taken to provide adequate vibration and consolidation of hand finish concrete placements. Hand manipulated mechanical vibrators shall be used in sufficient number required for uniform internal vibration and proper consolidation of the pavement. Over-vibration shall be avoided.

The ten foot wide "Straight Edge" shall be used immediately behind the paving machine or template to help strike off the rough areas. The ten foot wide "Sentem" shall then be used behind the "Straight Edge" to complete the smoothing and sealing of the pavement surface. A five-foot wide "Bull Float" may be used for finishing the surface of sidewalks and driveway approaches and other special areas, when approved by the OWNER, to help smooth and seal the pavement surface. If the "Bull Float" is approved by the OWNER for use in finishing of transition areas of the street paving, the ten foot wide "Straight Edge" shall be used behind the "Bull Float" to check and complete the sealing and smoothing of the pavement surface. The "Bull Float" shall not be used in place of the ten foot wide "Sentem" in the main pavement finishing operation.

(Page 303-19. Replace **Item 303.5.6.1. Machine**, with the following: (A new sentence has been added to the end of this Item.))

**303.5.6.1.COD: MACHINE:** When the concrete has been deposited, it shall be approximately leveled and then struck off to such elevation that, when mechanically screeded and tamped, the concrete shall be thoroughly compacted and finished to the required line, grade and section with all surface voids filled. Where bar mats or wire mesh reinforcing is specified, method shall be in accordance with **Item 303.5.3. Placing Reinforcing Steel, Tie, and Dowel Bars**. Machine finishing of concrete base and pavement shall include the use of power-driven finishing machines with internal vibrators fixed to the machine on a spacing not to exceed 24 inches.

(Page 303-19. Replace **Item 303.5.6.2. Hand**, with the following: (The first paragraph has been replaced and new paragraphs have been added to the end of this Item.))

**303.5.6.2.COD: HAND FINISHING:** Hand finishing will be permitted on the transition from a crowned section to a super-elevated section without crown on curves. Hand finishing will also be permitted on pavement widening, on sections where the pavement width is not uniform, at intersections, where required monolithic widths are greater than that of available finishing machines, on streets less than 200 feet in length, alley paving, and elsewhere where mechanical finishing is not specified or required by these specifications.

When the hand method of striking off and consolidating is permitted, the concrete, as soon as placed, shall be approximately leveled and then struck off and screeded to such elevation above grade that, when consolidated and finished, the surface of the pavement shall be at the grade elevation shown on the plans. The entire surface shall then be tamped and the concrete consolidated so as to insure maximum compaction and a minimum of voids. For the strike off and consolidation, both a strike template and tamping template shall be provided on the work. In operation the strike template shall be moved forward with a combined longitudinal and transverse motion and so manipulated that neither end of the template is raised from the forms during the striking-off process. A slight excess of material shall be kept in front of the cutting edge at all times.

The straightedge and joint finishing shall be as hereinabove prescribed.

At the option of the CONTRACTOR or when directed by the OWNER, an approved vibrating screen may be used in place of the strike-off template and tamping template specified in the Standard Specifications for hand finished base or pavement. The vibrating screen shall not be used in place of the finishing machine on work specified to receive a

mechanical finish. The screen shall be operated over each area as many times and at such intervals as directed and as required to produce a compacted slab free of surface voids with the surface screened to the required section.

Hand finish shall not be a separate pay item in this contract, but the costs associated with hand finish shall be considered incidental to the pay items provided.

(Page 303-19. Replace **Item 303.5.7. Curing**, with the following:)

**303.5.7.COD: CURING:** The curing of concrete pavement shall be thorough and continuous throughout the entire curing period. Failure to provide proper curing as herein prescribed shall be considered as sufficient cause for immediate suspension of paving operations. The curing method as herein specified does not preclude the use of any of the other commonly used methods of curing, and the OWNER may approve them if so requested by the CONTRACTOR. If any selected method of curing does not afford the desired results, the OWNER shall have the right to order that another method of curing be instituted. Immediately after the finishing of the surface, the pavement shall be covered with a continuous, uniform membrane forming water-impermeable coating. The membrane-forming compound shall be of the type specified in **Item 303.2.12.1.1. Membrane Forming Compounds**, After removal of the side forms, the sides of the slab shall receive a like coating before earth is banked against them. The solution shall be applied, under pressure with a spray nozzle, in such a manner as to cover the entire surfaces thoroughly and completely with a uniform film.

The rate of application shall be such as to insure complete coverage and shall not exceed 150 square feet per gallon of curing compound. When thoroughly dry, it shall provide a continuous and flexible membrane, free from cracks or pinholes; and shall not disintegrate, check, peel or crack during the curing period. If for any reason the seal is broken during the curing period, it shall be immediately repaired with additional sealing solution.

When tested in accordance with ASTM Designation C 156, the membrane forming curing compound shall provide a film that shall have retained within the test specimen the following percentages of the moisture present in the specimen when the curing compound was applied:

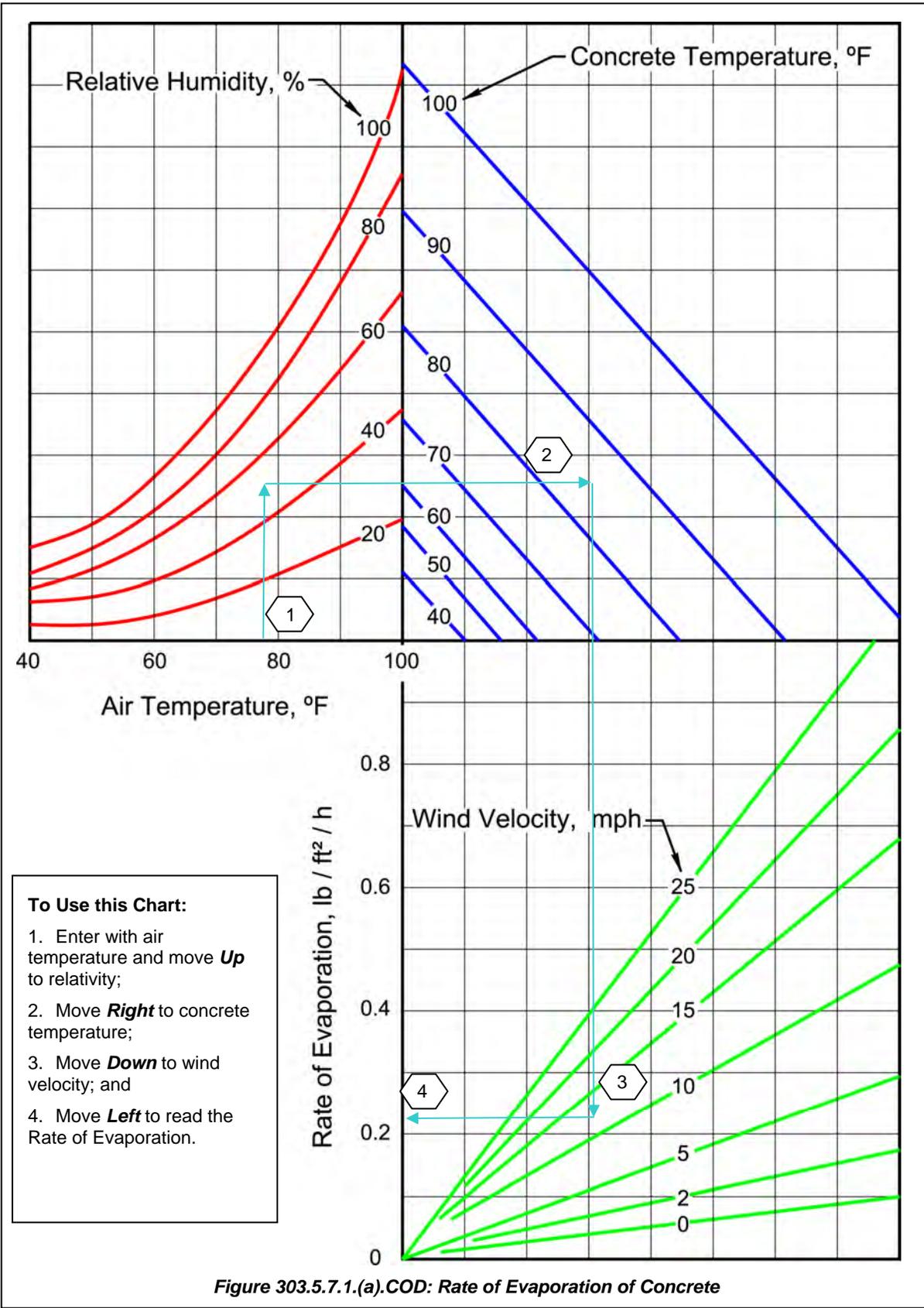
Retained Moisture

**Table 303.5.7.(a).COD: Water Retention by Curing Materials**

<b>Time</b>	<b>Minimum Retained Moisture</b>
After 24 Hours	97%
After 3 days	95%
After 7 days	91%

**303.5.7.1.COD: PLASTIC SHRINKAGE CRACKING:** When conditions of wind, humidity, ambient temperature and concrete temperature create a condition whereby surface moisture evaporation may exceed 0.2 lb. per square foot per hour as determined from the chart shown on Figure 1, a monomolecular film may be applied to the concrete or an approved polyethylene film shall be applied immediately behind the first screening. Rate of application shall be in accordance with manufacturer’s recommendations. Paving operations may also be discontinued, at the option of the CONTRACTOR, until the evaporation rate is reduced below 0.2 pound per square foot per hour. The polyethylene or monomolecular film is not a replacement for the membrane forming curing compound and their use may be discontinued once the evaporation rate has decreased to less than 0.2 lb. per square foot per hour. Application of the membrane-forming compound will be applied as specified under (I) Curing, first paragraph.

When called for in the contract documents, the CONTRACTOR shall be responsible for the proper storage, maintenance, and any required curing of concrete test samples made by the OWNER



(Page 303-20. Add the following:)

**303.5.12.COD: MIX DESIGNS:** *At least 10 days prior to the start of concreting operations, the CONTRACTOR shall submit to the OWNER a design of the proposed concrete mix, together with samples of all materials to be incorporated into the mix and a full description of the source of supply of each material component. The proposed batch designs must be submitted to the OWNER on the approved form shown later in this section.*

*The design of the concrete mix shall produce a quality concrete complying with these specifications and meet the requirements of the **Latest ACI 318, Chapter 5, Concrete Quality, Mixing and Placing** except as amended by these provisions. The concrete mix design shall include the following information:*

- (1) Design Requirements and Design Summary;*
- (2) Material source;*
- (3) Dry weight of cement/cu. yd. and type;*
- (4) Dry weight of fly ash/cu. yd. and type, if used;*
- (5) Saturated surface dry weight of fine and coarse aggregates/cu. yd.;*
- (6) Design water/cu. yd.;*
- (7) Quantities, type, and name of admixtures with manufacturer's data sheets;*
- (8) Current strength tests or strength tests in accordance with ACI 318;*
- (9) Current Sieve Analysis and -200 Decantation of fine and coarse aggregates and date of tests;*
- (10) Fineness modulus of fine aggregate;*
- (11) Specific Gravity and Absorption Values of fine and coarse aggregates; and*
- (12) L.A. Abrasion of coarse aggregates.*

*On the next page is a copy of the required Concrete Mix Design Form, which must be used for all batch design submittals.*

*On the page following the Concrete Mix Design Form, is a copy of an acceptable batch design for information purposes only, which gives the required information. Concrete shall not be placed on projects until an approved batch design is on file with the Construction Services Division. The concrete batch designs shall be submitted to the OWNER for review and approval. Upon approval, the approved batch design shall be submitted to the Project Manager of the Construction Services Division for filing and authorization to proceed.*

*All material samples submitted to the OWNER shall be sufficiently large to permit laboratory batching for the construction of test specimens to check the adequacy of the design. When the design mix has been approved by the OWNER, there shall be no change or deviation from the proportions thereof or sources of supply except as hereinafter provided. No concrete may be placed on the job site until the mix design has been approved by the OWNER in writing to the CONTRACTOR.*

**Concrete Mix Design Form**

**Design No:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Client: \_\_\_\_\_

Project: \_\_\_\_\_

Required: \_\_\_\_\_

Design: \_\_\_\_\_

Summary: \_\_\_\_\_

**Calculated Unit Weight (pcf):** \_\_\_\_\_

**Measured Unit Weight (pcf):** \_\_\_\_\_

**Measured Slump (inches):** \_\_\_\_\_

**Measured Air Content (percent):** \_\_\_\_\_

**Materials:**

**Batch Portions: (One Cubic Yard)**

<i>Materials</i>	<i>Weight (lbs)</i>	<i>Absolute Volume</i>
Totals		27 cubic feet

**CONFIRMATION TESTS**

	<u>7 - Day</u>	<u>28 - Day</u>
Compressive Strength (PSI)	_____	_____
	_____	_____
	_____	_____
	_____	_____

**Summary Results of  
Sieve Analysis**

**Design No:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Fine Aggregates:**

Sieve Size	Percent Passing
3/8"	100
No. 4	95 – 100
No. 8	80 – 100
No. 16	50 – 85
No. 30	25 – 60
No. 50	10 – 30
No. 100	0 – 10
% Passing No. 200	Max 3.0
Fineness Module	2.3 to 3.1
Insoluble Residue	Min. 28
Specific Gravity (SSD)	
Absorption	

**NOTES:**

- (1) The difference between the percent passing any two consecutive sieve sizes shall not exceed 45.0%

**Coarse Aggregate**

Sieve Size	Percent Passing	Grade _____ Specifications
Specific Gravity (SSD)		
Absorption		
LA. Abrasion, %loss		

**(FILLED OUT EXAMPLE)**

**Concrete Mix Design Form**

**Design No:** 6

**Date:** 07/22/2010

Client: XYZ \_\_\_\_\_  
 Project: C.A. Street \_\_\_\_\_  
 Required: Machine Finish. 4,000 psi at 28 day; Max 4 inch slump, Air 5.0% ±1.5%  
 Design: 7 day: 4447; 28-day: 5340  
 Summary: Cement 6 sacks / cubic yard w/20% Fly Ash Replacement  
 C.A. 61 Percent Coarse Aggregate  
 F.A. 39 Percent Fine Aggregate  
 Water 32 gals; water / cement ration: 0.45  
 Additive: AEA – Pave Air 1.0 FL. OZ./Sack Cement

**Calculated Unit Weight (pcf):** 144.0  
**Measured Unit Weight (pcf):** 144.2  
**Measured Slump (inches):** 3"  
**Measured Air Content (percent):** 53.0%

**Materials:**

Fly Ash: Gifford Hill  
 Cement: Type I, North Texas Cement  
 C.A: Gifford Hill  
 F.A. Manufactured Sand, Gifford Hill (Perch Hill)  
 Natural Sand, Gifford Hill  
 Additives: AEA – Pave Air Master Builders  
 Water Reducer: NONE

Caisson, Texas  
 Midlothian, Texas  
 Bridgeport, Texas  
 Chico, Texas  
 Thackerville, Oklahoma  
 (ASTM C-260)  
 (ASTM C-494)

**Batch Portions: (One Cubic Yard)**

<b>Materials</b>	<b>Weight (lbs)</b>	<b>Absolute Volume</b>
Cement	450 – (6 Sacks)	2.29
Fly Ash	141	0.82
C.A.	1861 SSD (61%)	11.14
Natural F.A.	933 SSD (39%)	5.70
Manufactured F.A.	236	1.42
Water	267 (32 gal)	4.28
A.E.A.	6 oz. (5%)	1.35
Totals		27 cubic feet

**CONFIRMATION TESTS**

	<u>7 - Day</u>	<u>28 - Day</u>
Compressive Strength (PSI)	4430 _____	5300 _____
	4470 _____	5360 _____
	4440 _____	5360 _____

(FILLED OUT EXAMPLE)

**Summary Results of  
Sieve Analysis**

Design No:         6        

Date:         7/22/2010        

**Fine Aggregates:**

Sieve Size	Percent Passing		Combined Gradation	Specifications
	Gifford Hill Manufactured Perch Hill	Gifford Hill Natural Thackerville		
3/8"	100	100	100	100
No. 4	99.4	98.6	98.8	95 – 100
No. 8	84.9	90.3	89.2	80 – 100
No. 16	54.9	80.0	75.0	50 – 85
No. 30	33.8	55.0	50.8	25 – 60
No. 50	19.1	17.8	18.1	10 – 30
No. 100	8.8	2.1	3.4	0 – 10
% Passing No. 200 by Decantation	3.6	0.4	1.0	Max 3.0
Fineness Modulus			2.647	2.3 to 3.1
Insoluble Residue			38.0	Min. 28
Specific Gravity (SSD)	2.68	2.62		
Absorption	1.5	0.8		

**Coarse Aggregate**

Sieve Size	Percent Passing	Grade _____ Specifications
2"	100	100
1 ½"	99.4	95 – 100
¾"	45.6	40 – 70
3/8"	18.4	10 – 30
No. 4	1.8	0 – 5
% Passing No. 200	0.6	Max. 1.0
Specific Gravity (SSD)	2.68	
Absorption	0.8	Max 45
LA. Abrasion, %loss	29.0	

(Page 303-21. Add the following Item:)

**303.7.1.COD: MEASUREMENT AND PAYMENT:** *Pavement leave-outs, as defined in Item 303.7. Pavement Leaveouts, of the Standard Specifications and provided in the proposal and contract as a separate pay item, will be measured for payment per each for every section of pavement left out and requiring a separate placing operation, regardless of the size. Restoration of leave-outs shall be made as directed by the OWNER using a Class Hand Finish Concrete Mix. Payment will be paid for at the contract unit price per each, which shall be considered full compensation for any added material cost or inconvenience to the CONTRACTOR caused by this disturbance in the sequence of pouring operations.*

(Page 303-21. Replace **Item 303.8.3.1. For Standard Classes of Concrete**, with the following: (A new paragraph has been added at the end of this Item.))

**303.8.3.1.COD: STANDARD CLASSES OF CONCRETE TEST CYLINDERS:** During the progress of the work, the CONTRACTOR shall cast test cylinders, in accordance with ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field, to maintain a check on the compressive strengths of the concrete being placed.

In accordance with ASTM C31 and ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete, four test cylinders shall be taken from a representative portion of the concrete being placed for every 150-cubic yards of concrete pavement placed, but in no case shall less than 2 sets of cylinders be taken from any one day's placement.

After the cylinders have been cast, they shall remain on the job site and then transported, moist cured, and tested by the OWNER in accordance with ASTM C31 and ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

In each set, one of the cylinders shall be tested at 7-days, two cylinders shall be tested at 28-days, and one cylinder shall be held or tested at 56-days, if necessary.

If the 28-day test results indicate deficient strength, the CONTRACTOR may, at its option and expense, core the pavement in question and have the cores tested by an approved laboratory, in accordance with ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete and ACI 318 protocol, except the average of all cores must meet 100% of the minimum specified strength, with no individual core resulting in less than 90% of design strength, to override the results of the cylinder tests.

The CONTRACTOR shall be responsible for the proper storage, maintenance, and any required curing of concrete test samples made by the OWNER. The CONTRACTOR shall provide and maintain curing facilities for the purpose of curing concrete test specimens on site in accordance with ASTM C31. The cost of all materials used in test specimens and the cost of storing, maintaining and of providing and maintaining curing facilities will not be paid for as a separate contract pay item, and the costs thereof shall be considered incidental to the contract pay items provided.

Cylinders and/or cores must meet minimum specified strength. Pavement not meeting the minimum specified strength shall be subject to the money penalties or removal and replacement at the CONTRACTOR'S expense as shown in Table 303.8.3.1.(a) Standard Class Concrete Deficiency Penalties.

**Table 303.8.3.1.(a).COD: Standard Class Concrete Deficiency Penalties**

Percent Deficient	Percent of Contract Price Allowed
Greater Than 0% -- Not More Than 5%	95 – percent
Greater Than 5% -- Not More Than 10%	90 – percent
Greater Than 10% -- Not More Than 15%	80 – percent
Greater Than 15%	60 – percent or removed and replaced at the entire cost and expense of CONTRACTOR as directed by OWNER.

The amount of penalty shall be deducted from payment due to CONTRACTOR; such penalty deducted is to defray the cost of extra maintenance.

These requirements are in addition to the requirements of **Item 303.9.COD Measurement and Payment**.

The strength requirements for structures and other concrete work are not altered by this special provision.

No additional payment over the contract unit price shall be made for any pavement of strength exceeding that required by plans and/or specifications.

*The CONTRACTOR, if directed by the OWNER, shall provide and maintain curing facilities for the purpose of curing concrete test specimens. Provisions shall be made to maintain the water in the curing tank at temperatures between 70 degrees Fahrenheit (21° C) and 90 degrees Fahrenheit (32° C). The cost of all materials used in test specimens and the cost of storing, maintaining and of providing and maintaining curing facilities will not be paid for as a separate contract pay item, and the costs thereof shall be considered incidental to the contract pay items provided.*

(Page 303-23. Replace **Item 303.9. Measurement and Payment**, with the following: (A new paragraph has been added to the end of this Item.)

**303.9.COD: MEASUREMENT AND PAYMENT OF PORTLAND CEMENT CONCRETE PAVEMENT:**

**303.9.1.COD:MEASUREMENT AND PAYMENT OF PORTLAND CEMENT CONCRETE PAVEMENT – PUBLIC WORKS AND TRANSPORTATION:** This item concerns projects awarded and administrated by the City of Dallas Department of Public Works and Transportation. Portland cement concrete pavement shall be measured by the square-yard (yd<sup>2</sup>) of completed and accepted pavement. Measurement for reinforced concrete pavement shall be by the square-yard (yd<sup>2</sup>) measured in its final position.

The work performed and material furnished as prescribed by this item and measured as provided in this item shall be paid for at the unit price bid per square-yard (yd<sup>2</sup>) for concrete pavement or the adjusted unit price for pavement of deficient thickness as provided under Pavement Thickness Test and Pavement Strength Test, which price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and unloading, storing, hauling and handling all concrete ingredients, including all freight and royalty involved; for mixing, placing, finishing and curing all concrete; for furnishing and installing all reinforcing steel; for furnishing all materials and placing longitudinal, warping, expansion, and contraction joints, including all steel dowels, dowel caps and load transmission units required, wire and devices for placing, holding and supporting the steel bar, load transmission units, and joint filler material in the proper position; for coating steel bars where required by the plans; for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

**303.9.2.COD:MEASUREMENT AND PAYMENT OF PORTLAND CEMENT CONCRETE PAVEMENT – DALLAS WATER UTILITIES:** This item concerns projects awarded and administrated by the Dallas Water Utilities. Portland cement concrete pavement shall be measured by the cubic-yard (yd<sup>3</sup>) of completed and accepted pavement. Measurement for reinforced concrete pavement shall be by the cubic-yard (yd<sup>3</sup>) measured in its final position.

The work performed and material furnished as prescribed by this item and measured as provided in this item shall be paid for at the unit price bid per cubic-yard (yd<sup>3</sup>) for concrete pavement or the adjusted unit price for pavement of deficient thickness as provided under Pavement Thickness Test and Pavement Strength Test, which price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and unloading, storing, hauling and handling all concrete ingredients, including all freight and royalty involved; for mixing, placing, finishing and curing all concrete; for furnishing and installing all reinforcing steel; for furnishing all materials and placing longitudinal, warping, expansion, and contraction joints, including all steel dowels, dowel caps and load transmission units required, wire and devices for placing, holding and supporting the steel bar, load transmission units, and joint filler material in the proper position; for coating steel bars where required by the plans; for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

*(blank)*

## ITEM 305.COD: MISCELLANEOUS ROADWAY CONSTRUCTION

(Page 305-3. Replace **Item 305.2.2.2. Reinforcement**, with the following:)

**305.2.2.2.COD: REINFORCEMENT.** *Driveway approaches and walk reinforcing shall be No. 3 bars on 24-in. (60cm) centers or No. 4 on 30-in. (76cm) centers. Sidewalk reinforcing (except in driveway approach) may be No. 3 bars on 24-in. (60cm) centers or No. 10, 6-in. x 6-in. (15cm x 15cm). Reinforcement is required in all driveways and walks.*

(Page 305. Add the following:)

### **305.2.3.9.COD: CONSTRUCTION METHODS: STREET SURFACE MILLING AND RESURFACING:**

*The existing surface shall be milled to the depths and dimensions as directed by the OWNER. It is not the intention to mill the original concrete base of the street, but concrete patches or other obstructions protruding above the original base into the surface specified for removal, will be milled to conform to the desired section. Variations in depth of milling operations shall not exceed 2-inches below the finished surface prior to resurfacing.*

*Normal milling operations shall be conducted to the edge of manholes, valves and other appurtenances encountered. If the milling machine cannot accomplish this, then milling with hand tools or by other methods shall be employed. No separate compensation will be paid for any milling adjacent to appurtenances that is done with hand tools or by other methods.*

*The milling machine shall self-load the milled material onto an adjacent hauling unit. Water or other approved liquid shall be sprayed on the material being milled to eliminate dust during milling operations. Brooming and/or sweeping to remove any loose material not removed by the machine shall be conducted immediately behind the machine in an approved manner to the satisfaction of the OWNER. All milled surfaces shall be cleaned, inspected, measured, and approved before the application of the tack coat or asphaltic concrete mixture.*

*Normal operations will require complete cleanup before the CONTRACTOR is allowed to leave the job. The CONTRACTOR will not be permitted to mill any street more than a week in advance of the scheduled resurfacing. Patches will be placed around all exposed surface protrusions the same day they are exposed.*

*Failure to observe these constraints may result in shutting down the work until proper adjustments in operations are made.*

*This item will be bid on the basis that all milled material will be hauled and disposed of in a legal manner of the CONTRACTOR'S choice.*

*Surface milling will be measured for payment in square yards of surface milled regardless of the number of passes required. The contract unit price shall be the total compensation for milling the surface, removal and disposal of the milled material, cleaning the milled area, and for all labor, equipment and incidentals necessary to complete the work in accordance with this Provision, the Specifications and the attached Details.*

*The unit price for Surface Milling will not be subject to renegotiation due to overrun or under run of contract quantities.*

*Asphalt pavement for the entire width of the street or as directed by the City shall be placed over the milled surface with a minimum compacted thickness of two (2) inches and in accordance with **Item 302.9 Hot-Mix Asphalt Pavement (with Addendum Items)**, of these Specifications. Hot-mix asphalt shall be placed with a lay-down machine: a drag box will not be authorized. Asphalt pavement will be paid under appropriate bid item numbers.*

*(blank)*

## **DIVISION 400 ROADWAY MAINTENANCE AND REHABILITATION**

*(blank)*

## ITEM 404.COD: SURFACE TREATMENT

(Page 404-1. Replace **Item 404.3.1. Laboratory Evaluation**, with the following:)

### **404.3.1.COD: LABORATORY EVALUATION:**

**404.3.1.1.COD: GENERAL:** Before work commences, the CONTRACTOR shall submit a signed original of a mix design covering the properties and proportioning of the specific materials to be used on the project. This design must have been performed by a qualified laboratory. Previous lab reports covering the exact materials to be used may be accepted provided they were made during the calendar year. This initial mix design will be done at the CONTRACTOR'S expense. Upon receipt of the original mix design, an independent qualified laboratory selected by the OWNER will perform tests using the same materials as used in the initial mix design for verification of the results. This testing will be done at the OWNER'S expense. No work will begin until all materials and/or mix design proportions have met the specifications as required in this item. Once the materials are approved, no substitution will be permitted unless first tested and approved by the methods stated above.

**404.3.1.2.COD: ADDITIONAL SPECIFICATIONS:** The following specifications and test methods form a part of this specification.

**AASHTO - American Association of State Highway and Transportation Officials**

**ASTM - American Society for Testing and Materials**

**ISSA - International Slurry Seal Association**

**Table 404.3.1.2.(a).COD: Test Methods For Aggregate And Mineral Filler**

AASHTO T2	ASTM D	75	Sampling Aggregates
AASHTO T27	ASTM C	135	Sieve Analysis of Aggregates
AASHTO T11	ASTM C	117	Materials Finer than No. 200 in Mineral Aggregate
AASHTO T176	ASTM D	2419	Sand Equivalent Value of Soils and Fine Aggregate
AASHTO T84	ASTM C	128	Specific Gravity and Absorption of Fine Aggregate
AASHTO T19	ASTM C	29	Unit Weight of Aggregate
AASHTO T104	ASTM C	88	Soundness of Aggregates by use of Sodium Sulfate or Magnesium Sulfate
AASHTO T96	ASTM C	131	Resistance to Degradation of small size Aggregate by use of the Los Angeles machine.
	ASTM D	1073	Specification for Fine Aggregate for Bituminous Paving Mixtures
	ASTM D	242	Mineral Filler for Bituminous Paving Mixtures
AASHTO T37	ASTM D	546	Sieve Analysis of Mineral Filler

**Table 404.3.1.2.(b).COD: Test Methods For Emulsified Asphalt**

AASHTO T40	ASTM D	140	Sampling Bituminous Materials
AASHTO T140	ASTM D	977	Specification for Emulsified Asphalt
AASHTO T208	ASTM D	2397	Specification for Cationic Emulsified Asphalt
AASHTO T59	ASTM D	244	Testing Emulsified Asphalt
AASHTO T59	ASTM D	88	Testing Method for Saybolt Furol Viscosity
AASHTO T44	ASTM D	113	Test Method for Ductility of Bituminous Materials
AASHTO T44	ASTM D	2042	Test Method of Solubility of Asphalt Materials in Trichloroethylene
AASHTO T49	ASTM D	5	Test Method for Penetration of Bituminous Materials
	ASTM D	2398	Test Method for Softening Point of Bitumen in Ethylene Glycol (Ring and Ball)

**Table 404.3.1.2.(c).COD: Test Methods For Slurry Seal**

ASTM D	3910	Design, Testing and Construction of Slurry Seal
ASTM D	2172	for Bituminous Paving Mixture
ISSA T	101	Guide for Sampling Slurry Mix for Extraction Test
ISSA T	106	Measurement of Slurry Seal Consistency
ISSA T	111	Outline Guide Design Procedure for Slurry Seal
ISSA T	113	Trial Mix Procedure for Slurry Seal
ISSAT	114	Wet Stripping Test for Cured Slurry Seal Mixes
ISSA T	115	Determination of Slurry Seal Compatibility

(Page 404-4. Replace **Item 404.3.3.1. Calibration** through **Item 404.3.3.2. Verification**, with the following: (The last paragraph has been added.))

**404.3.3.1.COD: CALIBRATION:** Each piece of equipment to be used shall be calibrated in the presence of the *OWNER* prior to construction. Previous calibration documentation covering the exact materials to be used may be accepted provided they were made during the calendar year. No machine will be allowed to work on the project until the calibration has been completed and/or accepted.

**404.3.3.2. COD: VERIFICATION:** Test strips shall be laid (location to be determined by the *OWNER*) before construction begins. The *OWNER* will observe the test strip for verification or rejection according to the specifications. Upon failure of any test, additional test strips will be laid at no cost to the *OWNER*. The square-yards (m<sup>2</sup>) of the first test strip will be measured and paid for at the contract unit price.

A field test shall be made to check consistency of the surface treatment. If a line made through the surface treatment fills up, the mixture is too wet, which the CONTRACTOR shall correct. If the line stays, the slurry has a proper consistency.

*(Keeping proper consistency is a major concern. A wet mix will cause an asphalt rich surface. Consistency can be checked in the field by making a line through the slurry immediately behind the spreader box. If the line stays, the slurry is at a proper consistency level. If the line fills up, the mix is too wet).*

(Page 404-4. Add the following Section)

**404.3.3.5.COD: AUXILIARY EQUIPMENT:** Suitable crack and surface cleaning equipment, barricading equipment, hand tools and any support equipment will be provided by the CONTRACTOR as necessary to perform the work.

(Page 404-4. Replace **Item 404.3.4. Preparation**, with the following:)

**404.3.4.COD: SURFACE PREPARATION:**

**404.3.4.1.COD: GENERAL:** Immediately prior to applying the slurry seal, the surface of the pavement shall be thoroughly cleaned of all loose material, vegetation, soil and other objectionable material. Any breakdowns, base failures, or other surface defects beyond the scope of the CONTRACTOR'S preparation duties should be properly repaired before application of the slurry seal begins. Manholes, valve boxes, raised pavement markers and other designated objects will be covered by the CONTRACTOR to insure their integrity. After completion of slurry placement, the CONTRACTOR shall remove said covers so the objects protected will remain full functional. Any objects damaged by the CONTRACTOR shall be repaired or replaced at no cost to the City.

**404.3.4.2.COD: TACK COAT:** If required, the CONTRACTOR shall apply a tack coat or a second coverage of slurry seal on brick, concrete, or other highly absorbent or polished surfaces. If a tack coat is required, a 1-part emulsion, 3-part water tack coat of the same asphalt emulsion type and grade as specified for the slurry is required.

Rate of application: 0.05 to 0.10 gallons to square yard. All debris and unused material shall be removed.

(Page 404-5, Add the following Section:)

**404.3.7.COD: LIMITATIONS:**

**404.3.7.1.COD: WEATHER:** All slurry seal will be applied between March 1 and October 1. If all work is complete on a project, other than the application of the slurry seal, between October 1 and March 1, the OWNER shall have the option of deleting the slurry seal from the CONTRACT at no additional cost to the OWNER, or suspending time charges until the slurry can be applied between March 1 and October 1.

The slurry shall be applied only if the air and ground temperature is at least 60 degrees F. and rising.

**404.3.7.2.COD: NO SLURRY SHALL BE APPLIED WHEN:**

- (1) In the period following precipitation with water remaining on the surface to be coated.
- (2) In foggy conditions.
- (3) If there is a threat of rain before the slurry can fully cure.
- (4) If there is danger that the finished product will freeze before 24 hours.
- (5) If weather conditions prolong opening to traffic beyond the times specified by the OWNER.
- (6) The slurry seal will be placed on the location and within the time limit as specified by the OWNER.

**404.3.7.3.COD: PURPOSE OF SLURRY SEAL APPLICATION:**

- (1) Type of Slurry by Aggregate Grade and Uses:
  - (a) **TYPE II:** This blend is desirable for filling surface voids, correcting moderate surface defects, and providing a sealing and wearing surface. An example would be on pavements with medium textured surfaces, which would require this size aggregate to fill in the cracks and provide a minimum wearing surface.  
**Rate of application:** 10 to 15 pounds per square yard
  - (b) **TYPE III.** This blend is used to give maximum skid resistance and an improved wearing surface. An example would be on pavements, which have highly textured surfaces, require this size aggregate to fill in the voids, and provides an improved wearing surface.  
**Rate of application:** 15 or more pounds per square yard.

**404.3.7.4.COD: CONDITION AND TYPE SURFACE TO BE TREATED:** Any base failures, severe surface defects, or similar conditions, which are present, should be properly repaired to insure correct application and performance of the slurry. Slurry normally adheres to asphalt surfaces more readily than concrete, especially worn, or polished areas. Heavy traffic areas, especially those on concrete surfaces, required greater care in selection of type coarseness of slurry, allowing the slurry to fully cure before opening to traffic, and the placing of either a tack coat or a second coat of slurry for greater adhesion and wear purposes.

**404.3.7.5.COD: NOTIFICATION:** It shall be the CONTRACTOR'S duty to notify all homeowners and business affected by the construction a minimum of 48 hours in advance of the surfacing. Should the work not occur on the specified day, new notification will be distributed as required. Suitable no parking signs will be properly posted on streets where parked vehicles would interfere with the surfacing 24 hours prior to starting work.

**404.3.7.6.COD: TRAFFIC CONTROL:** It shall be the CONTRACTOR'S responsibility to provide adequate traffic control measures, such as barricades, cones, advance warning signs, flagmen, etc., to protect the uncured slurry surface from all types of traffic and provide traffic safety in the construction area. These measures shall be in accordance with the Section 6 "Texas Manual on Uniform Traffic Control Devices (MUTCD), latest edition" and the latest edition of the "City of Dallas' Traffic Barricade Manual". In cases of conflict, the City of Dallas' Traffic Barricade Manual will govern. Opening the traffic does not constitute acceptance of the work. Any damage to the uncured slurry will be the responsibility of the CONTRACTOR and will be repaired as directed by the OWNER. Approved temporary lane markings will be provided by the CONTRACTOR for placement as directed by the OWNER.

(Page 404-5. Add the following:)

**404.3.7.7.COD: SLURRY SEAL SURFACE TREATMENT:**

Slurry seal surface treatment will be applied on all asphalt-surfaced streets disturbed or as directed by the OWNER.

The OWNER shall have the option to delay or delete slurry sealing if the weather will not allow application within the allotted contract time. If the application is delayed, the CONTRACTOR will have ten (10) working days following notice to proceed with slurry sealing to resume and complete work before liquidated damages shall resume.

## **DIVISION 500 UNDERGROUND CONSTRUCTION AND APPURTENANCES**

*(blank)*

## ITEM 501 UNDERGROUND CONDUIT MATERIALS

(Page 501-1. Replace **Item 501.1. General**, with the following: (The last sentence has been replaced.))

### **501.1.COD: GENERAL:**

All pipe and fittings shall be new.

The OWNER shall at all times have free access to the manufacturer's plant while production in progress, and may at any time refuse to accept pipe made when the plant is failing to follow the stipulations of the specifications in regard to workmanship, or failing in provisions to insure a uniform product coming within the permissible variations of the specifications. The OWNER may reject pipe if adequate means and methods are not provided so as to insure the manufacture of a product of uniform high quality.

Pipe shall be color coded according to the American Public Works Association Uniform Color Code (i.e. blue for water, green for wastewater or storm drain lines, violet for reclaimed water, etc.) or labeled with labeling tape identifying its specific use. Where feasible, permanent identification of the piping service shall be provided by co-extruding color stripes into the pipe outside surface. The striping shall be of the same material except for the color. For co-extruded markings, IPS sized pipe shall have four equally spaced, longitudinal color stripes and DIPS sized pipe shall have three equally spaced pairs of longitudinal color stripes. The color or marking shall be visible on top of buried pipe when pipe is excavated.

Pipe shall be acceptable by the Underwriters' Laboratories, Inc. or Factory Mutual Research when specifically requested and shall be acceptable by the State Fire Insurance Commission for use in water distribution systems when used for fire protection without penalty. Potable water pipe shall also bear the seal of approval (or "NSF" mark) of the National Sanitation Foundation Testing Laboratory for potable water pipe.

*This shall include, but is not limited to, the latest Dallas Water Utilities Standard Drawings.*

(Page 501-1. Add **Item 501.4.1.NSF 61 Compliance**, with the following: (A new Item has been added to the bottom of Section 501.4.1.COD))

**501.4.1.1.COD: NSF 61 COMPLIANCE:** *All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement.*

(Page 501-4. Replace **Item 501.5.4.1. Rubber Gaskets**, with the following: The last paragraph has been deleted.)

**501.5.4.1.COD: RUBBER GASKETS:** *All rubber-type gaskets shall be of the round O-ring design. The rubber gasket shall be required to meet and be tested in accordance with ASTM C443 (C443M) Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.*

(Page 501-9. Replace **Items 501.7. Ductile Iron Pressure Pipe and Fittings** through **Item 501.7.6. Markings**, with the following: (In **Item 501.7.2. Joints**, the second paragraph (beginning Bolts and nuts ...) has been replaced with new wording; in **Item 501.7.4. Fittings**, the fifth paragraph (beginning Bolts and nuts...) has been replaced with new wording; **Item 501.7.7.COD: Design Requirements**, and **Item 501.7.8.COD: NSF Certification**, have been added.))

### **501.7.COD: DUCTILE-IRON PRESSURE PIPE AND FITTINGS:**

**501.7.1.COD: GENERAL:** Ductile-iron pressure pipe 4-in. through 64-in. shall conform to the American National Standard for Ductile-Iron Pipe Centrifugally Cast for Water or Other Liquids, AWWA C151. Polyethylene encasement for ductile iron pipe systems shall conform to **Item 502.8. Polyethylene Wrap for Metal Pipe and Fittings**.

*Ductile iron wall thickness in the Central Business District, Executive airport, and Love Field shall be a minimum of Class 54 unless specified otherwise in the special provisions or in plans to be a thicker class pipe. For large diameters and or deep cover, a special design shall be provided.*

*The ductile iron shall conform in all respects to the specifications set forth in ASTM Standard A 377, Standard Index of Specifications for Ductile Iron Pressure Pipe. The specific grade of ductile iron used shall be Grade 60-42-10, with a Minimum Tensile Strength of 60,000 psi, a Minimum Yield Strength of 42,000 psi, and a Minimum Elongation in 2" of 10%.*

*Ductile iron wall thickness for all pipes 3" through 12" in diameter shall be a minimum of Class 52 unless specified otherwise in the special provisions or in the plans. For larger diameters and deep cover, a special design shall be provided.*

*Polyethylene encasement for ductile iron pipe systems shall conform to **Item 502.8. Polyethylene Wrap for Metal Pipe and Fittings.***

**501.7.2.COD: JOINTS:** All ductile-iron pressure pipes shall be furnished with one of the types of joints indicated in Table 501.7.2.(a)COD Ductile Iron Pressure Pipe Joint Types and as described in the proposal or bid request.

*Bolts and nuts for mechanical joints shall comply with all provisions of AWWA C111, Section 11-8.5. Bolts and nuts for flanged ends shall be either ASTM A316 stainless steel bolts and nuts or ASTM A325 Type 3 bolts with ASTM A563 Grade C3 nuts.*

All threaded flanges shall be ductile iron.

**Table 501.7.2.(a).COD: Ductile Iron Pressure Pipe Joint Types**

Type Joint	AWWA Standard
Push-on	AWWA C111 Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
Mechanical Joint	AWWA C111 (same as above)
Flanged Ends	AWWA C110 Ductile-Iron and Gray-Iron Fittings, 3 In.-48 In. (76 mm-1,219 mm), for Water, or AWWA C115 Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
Grooved Ends	AWWA C606 Grooved and Shouldered Joints

**501.7.3.COD: COATING AND LINING:** All ductile-iron pipes shall be bituminous coated outside and cement mortar lined inside with seal coat in accordance with AWWA C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water. Cement mortar lined ductile iron pipe can be used for water and certain wastewater applications, such as non acid-producing gravity wastewater lines and wastewater force mains that unquestionably flow full. Contact pipe manufacture for linings suitable in other applications

**501.7.4.COD: FITTINGS:** Fittings shall be of ductile-iron and shall conform to AWWA C110 ANSI Standard for Ductile-Iron and Gray-Iron Fittings, 3-in. Through 48-in. (76mm through 1,219mm) for Water.

Welded-on outlets may be used in lieu of the tees shown on the plans. Outlet pipe shall be special thickness class 53. All weldments must be 55% nickel iron and each outlet pipe shall be air tested to 15-psi (103-kPa) to insure weld integrity. The outlet branches must be made from ductile iron pipe.

All fittings shall be rated for a minimum of 250-psi (2069-kPa) working pressure unless otherwise specified.

Special fittings using end condition combinations of bells, spigots, mechanical, integrally restrained, or push-on joints, flanges, or special internally locked joints shall be dimensioned in accordance with AWWA C110 or C153.

*Bolts and nuts for mechanical joints shall comply with all provisions of AWWA C111, Section 11-8.5. Bolts and nuts for flanged ends shall be either ASTM A316 stainless steel bolts and nuts or ASTM A325 Type 3 bolts with ASTM A563 Grade C3 nuts.*

The OWNER shall determine whether fittings shall be bituminous coated outside and cement-mortar lined inside with seal coat in accordance with AWWA C104 Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water or whether the interior and exterior surfaces shall be protected consistent with AWWA C116 Standard for Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings for Water Supply Service.

**501.7.4.1.COD: NSF 61 COMPLIANCE:** *All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement*

**501.7.5.COD: TESTS:** All ductile-iron pipe and fittings shall be tested in accordance with the applicable provisions of the specifications relating thereto.

**501.7.6.COD: MARKINGS:** Class, weight, and casting period shall be shown on each pipe.

**501.7.7.COD: DESIGN REQUIREMENTS:** The ductile iron shall conform in all respects to the specifications set forth in ASTM Standard A 377, Standard Index of Specifications for Ductile Iron Pressure Pipe. The specific grade of ductile iron used shall be Grade 60-42-10, with a Minimum Tensile Strength of 60,000 psi, a Minimum Yield Strength of 42,000 psi, and a Minimum Elongation in 2" of 10%. Ductile iron wall thickness for all pipes 3" through 12" in diameter shall be a minimum of Class 52 unless specified otherwise in the special provisions or in the plans. For larger diameters and deep cover, a special design shall be provided.

Pipe shall be specified by either Thickness Class or Pressure Class, in accordance with AWWA Standard C150 and AWWA Standard C 151 and shall be so designated in the plans and contract documents.

**501.7.8.COD: NSF 61 COMPLIANCE:** *All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement*

(Page 501-10. Replace **Item 501.9.3. Pipe and Fittings Requirements**, with the following: (**Item 501.9.3.1.COD: NSF 61 Compliance**, has been added.)

**501.9.3.COD: PIPE AND FITTINGS REQUIREMENTS:** Fabricated pipe and fittings shall be made of steel plate conforming to ASTM A283, Grade D, or ASTM A139, Grade B, C, or D in accordance with AWWA C200.

Mill-type pipe and fittings shall be Grade B conforming to AWWA C200. Nominal pipe diameter shall be as specified in the plans.

Nominal diameters for steel pipe sizes under 24-in. (61cm) are outside diameters and for sizes 24-in. (61cm) and over are inside diameters per AWWA M11 Steel Pipe—A Guide for Design and Installation.

The pipe wall thickness shall be as specified in the plans. Pipe sections shall be furnished in not less than 20 ft. (6.1 m) lengths except for specials and closures sections as may be required.

**501.9.3.1.COD: NSF 61 COMPLIANCE:** *All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement*

(Page 501-11. Add the following:)

**501.10.3.COD: LEAD FREE:** *Any pipe, fittings, solder, or flux, which is used in the installation or repair of any public water system, must be lead-free. For purposes of this section, "lead-free" means solders and flux containing not more than 0.2 percent lead and pipes and pipefittings containing not more than 8.0 percent lead.*

(Page 501-16. Replace **Item 501.13.5. Grout Holes**, with the following: (The "One-half of the total number of top plates ..." has been changed to "One-third of the total number of top plates ..."))

**501.13.5.COD: GROUT HOLES:** *One-third* of the total number of the top plates shall be equipped with 2-in. (50mm) diameter grout holes to facilitate grouting above and around the tunnel liner conduit. All grout holes shall be equipped with screw type galvanized plugs for final watertight closure of the grout holes.

(Page 501-17. Replace **Item 501.14.5. Fittings**, with the following: (The Sentence beginning "Bolts and nuts for mechanical ..." has been replaced with new wording. In addition, Item 501.14.6.COD: NSF 61 Compliance, has been added. ))

**501.14.5.COD: FITTINGS:** Fittings for PVC water pipe shall conform to one of the standards Table 501.14.5.(a)COD PVC Water Pipe Fittings unless otherwise specified. Fittings joints shall be push-on, integrally restrained, or mechanical. *Bolts and nuts for mechanical joints shall comply with all provisions of AWWA C111, Section 11-8.5. Bolts and nuts for flanged ends shall be either ASTM A316 stainless steel bolts and nuts or ASTM A325 Type 3 bolts with ASTM A563 Grade C3 nuts.*

**Table 501.14.5.(a).COD: PVC Water Pipe Fittings Standards**

Standard	Topic
AWWA C110 (ANSI A21.10)	Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water
AWWA C907	Polyvinyl Chloride (PVC) Pressure Fittings for Water—4 In. Through 8 In. (100 mm Through 200 mm)
AWWA C900	Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm) for Water Distribution
AWWA C905	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution

*Note: Compact Fittings are specifically not allowed and this Standard has been removed from this table.*

**501.14.6.COD: NSF 61 COMPLIANCE:** All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement

(Page 501-18. Replace **Item 501.18.3. Pipe Classification:** (Added ASTM F679 designation to the bottom of this table.))

**501.18.3.COD: PIPE CLASSIFICATION:** Pipe as indicated on the plans shall conform to one of the standards in Table 501.18.3.COD PVC Profile Gravity Pipe Standards.

**Table 501.18.3.(a).COD: PVC Profile Gravity Pipe Standards**

Standard	Topic	Notes
ASTM F789	Type PS-46 PVC Plastic Gravity Flow Sewer Pipe and Fittings, size 4 in. to 18 in.	Pipe conforming to ASTM F789 shall be joint compatible to ASTM D3034 pipe joint dimensions
ASTM F794	PVC Ribbed Gravity Sewer Pipe and Fitting Based on Controlled Inside Diameter, sizes 4 in. through 48 in.	--
ASTM F949	PVC Corrugated Sewer Pipe with Smooth Interior and Fittings, sizes 4 in. through 36 in. (46 psi pipe stiffness) or sizes 8 in. through 15 in. (115 psi pipe stiffness)	--
ASTM F1803	PVC Closed Profile Gravity Pipe and Fittings Based on Controlled Inside Diameter, sizes 18 in. through 60 in.	--
ASTM F679	PVC Large Diameter Plastic Gravity Sewer Pipe and Fittings", sizes 18-inch through 48-inch.	--

(Page 501-19. Add the following:)

**501.21.6.COD: NSF 61 COMPLIANCE:** All pipes must have received verifiable Certification of Compliance with the NSF 61 Standard. Pipe intended for use in wastewater lines are exempt from this requirement

(Page 501-21. Add the following:)

**501.25.COD: PVC PIPE MATERIALS ON HAND:** *The City of Dallas Water Utilities Department, Capital Improvement CONTRACTS, Managed by the Pipeline Program Section will allow PVC Water and Wastewater Pipe to be submitted on a case by case basis if the following conditions are met:*

- (1) All PVC Pipe, paid as Materials on Hand, must be kept by the CONTRACTOR in a secured location. CONTRACTOR will be responsible for the security of the Pipe.
- (2) All quantities of PVC Pipe stored outside must be covered with a reflective device to prevent long-term exposure to "ultra violet rays".
- (3) All City of Dallas approved storage facilities must be accessible to a representative of the City Of Dallas on a monthly basis to count and verify the quantities of Material on Hand.
- (4) All materials submitted for Materials on Hand must be labeled by CONTRACT Number for identification purposes and separated from other CONTRACT pipe.

*All requests to include Materials on Hand, shall be initiated by the CONTRACTOR in writing for approval by the OWNER prior to submittal of Material on Hand invoices. For more information concerning "Material on Hand" invoices, see **Item 106.4.COD: Off-Site Storage.***

*(blank)*

## ITEM 502.COD: APPURTENANCES

(Page 502-2. Delete **Items 502.1.2. Grade Adjustment Risers** through **Item 502.1.2.4.(A) Rubber Adjustment Riser Tests**, and replace with the following:)

### **502.1.2.COD: WASTEWATER MANHOLE GRADE ADJUSTMENTS RISERS:**

*The built-up section to adjust wastewater manholes to grade must be accomplished using precast concrete grade rings and non-shrink grout only. Brick and shrinkable grout are not permitted for this adjustment.*

(Page 502-4. Add the following:)

**502.1.4.8.COD: WASTEWATER MANHOLE FRAME SEALS:** *All newly constructed Wastewater Manholes shall include an Internal Frame Seal as specified in the Technical Specifications. All costs for furnishing and installing the seal and extensions shall be included in the applicable Unit Price bid for Wastewater Manholes.*

(Page 502-4. Add the following:)

**502.1.4.9.COD: INTERIOR COATINGS FOR MANHOLES:** *All proposed Wastewater Manholes require Internal Corrosion Protection as stipulated in the Technical Specifications.*

*Existing manholes designated for lining as shown on the drawings and specified herein shall be coated with a corrosion protection epoxy lining stipulated in the Technical Specifications. Payment for epoxy lining is covered under appropriate bid item numbers. Only epoxy coatings or other materials as shown on the latest version of the Wastewater Approved Materials list will be acceptable.*

(Page 502-5. Replace **Item 502.1.6. Measurement and Payment of Manholes**, with the following: (A new paragraph has been added to the end of this item.)

**502.1.6.COD: MEASUREMENT AND PAYMENT OF MANHOLES:** Measurement and payment for manholes shall be on a per each basis and shall cover all costs for the structure complete in place as designed. Included shall be all excavation, castings, reinforcing steel, concrete, backfill, and other materials, and all appurtenances for a complete and functional unit.

Payment for grade adjustment for existing manholes shall be measured and paid per each manhole.

The payment for extra depth in excess of the basic manhole depth shall be made under a separate item of bid as defined herein. If a separate bid item is not established in the contract, there shall not be any payment for extra depth, and the manhole shall be paid for as per each regardless of the depth. Unless specified otherwise, only one bid item shall provide payment for extra depth of manhole structures in excess of the basic depth for all types of manholes under consideration. Such extra depth shall be allocated on the total depth of all manholes, excluding shallow manholes, specified for the project. Payment for extra depth of the various types of manholes shall be at a unit price bid per linear foot (m) of additional depth, measured to the nearest 1/10 ft. (3 cm) over the basic depth stipulated for the type manholes under bid. A standard manhole is 6-ft. (1.8m) deep measured from the top of the manhole cover to the flow line of the invert. A shallow manhole is less than 6-ft. (1.8m) deep as measured above.

The contract price shall be the total compensation for the furnishing of all labor, materials, tools, equipment, and incidentals necessary to complete the work, including earth excavation, disposal of surplus materials and backfill, all in accordance with the plans and these specifications.

*Flowable fill shall be used as backfill material around new manholes located within existing or new pavement. This item shall be considered inclusive in the cost of the manhole construction as per NCTCOG specification **Item 502.1. Manholes (with Addendum Items)**. The 28-day compressive strength requirement is covered under the Public Works and Transportation's Pavement Cut and Repair Standards Manual, latest edition.*

(Page 502-5. Add the following:)

**502.1.7.COD: MANHOLE BACKFILL:** *Flowable fill shall be used as backfill material around new manholes located within existing or new pavement. This item shall be considered inclusive in the cost of the manhole construction. The 28-day compressive strength requirement is covered under the Public Works and Transportation's Pavement Cut and Repair Standards Manual, latest edition.*

(Page 502-7. Replace **Item 502.3.1. Materials** with the following: (Several things have been added and changed.)

### **502.3.COD: FIRE HYDRANTS:**

**502.3.1.COD: MATERIALS:** Fire hydrants which are to be installed as shown on the plans or to be furnished for general installation shall be dry-barrel traffic model that conform to AWWA C502 Standard for Dry-Barrel Fire Hydrants, except for changes and/or additions specified as follows or as shown on the plans or in the contract specifications.

- (1) All hydrant components covered by NSF-61 must comply with NSF-61 requirements.
- (2) Supplementary Details Specified. The type of shut-off may be either of the following:
  - (a) **Compression Type:** *Compression type with the flow.*
  - (b) **Compression Type:** *Compression type against the flow.*
  - (c) **Type of Shut-off:** *The valve action shall provide positive shut-off at minimum closing torque. Wedge action closing gates shall not be permitted, and the scissor type main valves shall not be permitted unless approved by the OWNER.*
  - (d) **Inlet Connection:** *Unless otherwise approved, the inlet connection shall be 6-inch (15.24 cm) standard mechanical joint hub complete with all joint accessories. Glands shall be full-dimensioned as defined in Table 11.1 of the AWWA C111. Bolts and nuts shall comply with all provisions of AWWA C111 Section 11-8.5. The inlet valve opening shall be 5 ¼ inches (13.34 cm) unless otherwise specified.*
  - (e) **Outlet Connection:** *All hydrants shall be equipped with:*
    - (1) *Two hose nozzles 2 ½ inches (6.35 cm) nominal I.D. National Standard Fire-Hose Coupling Screw Threads.*
    - (2) *One pumper nozzle 4 inches (10.16 cm) nominal I.D. City of Dallas Standard Threads as shown per File No. 684A-9.*
  - (f) **Bury length:** *Unless otherwise approved, hydrants shall be furnished for a 5-foot bury length.*
  - (g) **Nozzle Cap Gaskets:** *Nozzle Cap Gaskets shall be furnished on all nozzle caps and shall be long life, black rubber meeting ASTM D-2000, Classification System for Rubber Products in Automotive Applications, or equal.*
  - (h) **Operating and Nozzle Cap Nuts:** *Unless otherwise specified in the special provisions or in the plans, the operating and nozzle cap nuts shall be tapered pentagon nuts with faces not less than 1-in. (2.5cm) high. The operating and nozzle cap nuts shall be 1 ¼ inch (3.18 cm) point to flat at the base and 1 ⅛ inch ( 2.86 cm) point to flat at the top.*
  - (i) **Drain valve and outlet:** *hydrants shall be equipped with a minimum of two drainholes and provided with an automatic and positively operating noncorrodible drain or dip valve so as to drain the hydrant completely when the main valve is shut.*
  - (j) **Direction to Open:** *Direction to open is to be specified in the contract specifications. Number of turns to open shall be in accordance with AWWA Standard C502.*
  - (k) **Paint:** *The outside of the hydrant above the finished ground line shall be thoroughly cleaned and thereafter painted in the shop with two coats of primer. Two coats of primer are required. The second coat shall be a red tint, low sheen, alkyd vehicle type, non-enamel metal primer. The primer shall be compatible with a final coat of Jones Blair #931 aluminum paint. The painted surface shall extend to the ground line.*
  - (l) **Standpipe:** *Breakable parts of standpipe shall be located at the base of the head assembly. These parts shall be of the breakable flange type, or integral flange with sawed bolts or breakable nuts. Breakable flanges screwed to the standpipe will not be accepted. Flanges shall be designed so that an end wrench can be used on the nuts and bolts. Two-piece standpipes are not permitted. The complete hydrant shall be of such design that when the hydrant barrel is broken through traffic collision or otherwise, it may be replaced without disturbing the base of the hydrant.*
  - (m) **Stem:** *Provision shall be made in the design of the stem to disconnect the stem from the hydrant parts above the standpipe break point in the event of a traffic accident. Design of the coupling shall be such that when the coupling is broken, no parts shall come loose and fall into the hydrant barrel, and the break shall not occur through the pins or bolts holding the coupling to the stem.*
  - (n) **Automatic Travel Stop:** *Provision shall be made for an automatic travel stop, to prevent the hydrant from being over-opened. The travel stop shall be in the form of a stop-nut or a positive stop against the base of the hydrant shoe.*

- (o) **Breakable or Sleeve Type Coupling:** *If breakable or sleeve type couplings are used, they shall have sufficient torsional strength such that the torsional failure of the stem will occur at some point other than at the coupling. Design of the coupling shall be such that when the coupling is broken no parts will come loose and fall into the hydrant barrel and the break will not occur through the pins or bolts holding the coupling to the stem.*
- (p) **Blocking Requirements:** *The foot of the hydrant shall be designed with flat surfaces for placement of temporary thrust blocking and weight support. The area provided for temporary thrust blocking shall be opposite the centerline of the inlet waterway.*
- (q) **Main Valve Seats:** *Main valve seats shall be of such design that incorrect positioning is impossible and that the threads will be adequately guided into position. Arrangements shall also be made to hold the main valve gasket in place during assembly. The main valve is to be made of bronze and threaded into a bronze bushing in the hydrant base.*

(Page 502-7. Replace **Item 502.3.1.2. Breakable Type Hydrants** through **502.3.1.3 Main Valve Seats**, with the following :)

**502.3.1.2.COD: BREAKABLE TYPE HYDRANTS:** Breakable or Sleeve Type Couplings. The barrel of the hydrant between the base and the nozzle section must be made in two parts connected by a swivel flange or breakable flange, which shall permit facing of the nozzles in any desired direction in increments of 45° or less. The complete hydrant shall be of such design that when the hydrant barrel is broken through traffic collision or otherwise, it may be replaced without disturbing the base of the hydrant.

The materials used for gaskets between the upper and lower barrels and the base and nozzle section shall be compounded to conform to ASTM D2000 or an equal material that shall have OWNER approval prior to substitution unless otherwise specified in the plans.

Provision shall be made in the design of the stem to disconnect the stem from the hydrant parts above the standpipe break point in the event of traffic accidents. Design of the coupling shall be such that when the coupling is broken, no parts shall come loose and fall into the hydrant barrel, and the break shall not occur through the pins or bolts holding the coupling to the stem.

**502.3.1.3.COD: MAIN VALVE SEATS:** Main valve seats shall be of such design that incorrect positioning is impossible and that the threads will be adequately guided into position. Arrangements shall also be made to hold the main valve gasket in place during assembly. The main valve is to be made of bronze and threaded into a bronze bushing in the hydrant base.

(Page 502-7. Replace **Item 502.3.1.4. Nozzle Cap Chains**, with the following:)

**502.3.1.4.COD: NOZZLE CAP CHAINS:** *Nozzle cap chains or cables are not allowed.*

(Page 502-8. Replace **Item 502.3.1.5. Flanges**, with the following: (A new paragraph at the end has been added))

**502.3.1.5.COD: FLANGES:** All flanges other than barrel flanges shall be equipped with mechanical joints. Gland bolts shall be high-strength, low-alloy, corrosion-resistant steel conforming to ASTM A325 Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength, Type 3.

*Any flanges other than break flanges shall conform to AWWA C110 and have a minimum thickness of 1.00±0.12 inch (2.54cm). Bolt hole edge distance shall be sufficient to provide full support for the bolt head and nut.*

(Page 502-8. Replace **Item 502.3.1.6. Operating Stems**, with the following: (The last paragraph has been replaced.)

**502.3.1.6.COD: OPERATING STEMS:** The spindle of the operating stem and the stem nuts for hydrants having the operating threads located in the barrel or waterway shall be manganese bronze, Everdur or other high-quality noncorrodible metal. Barrel bolts and nuts shall meet the requirements of ASTM A307 Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

*Operating stems whose threads are not located in the barrel or waterway may be made of high-grade bronze or steel, and stem nuts shall be bronze. Steel stems shall have a bronze, stainless steel, or other non-corrodible metal sleeve where passing through O-rings. Operating threads must be sealed against contact with the water at all times regardless of open or closed position of the main valve.*

(Page 502-8. Replace **Item 502.3.1.7. O-Rings**, with the following:))

**502.3.1.7.COD: O-RINGS:** *O-rings shall be furnished in lieu of stem packing. They shall be the double O-ring type.*

(Page 502-8. Replace **Item 502.3.1.8. Provisions for Extension**, with the following:))

**502.3.1.8.COD: PROVISIONS FOR EXTENSION:** *All hydrants shall be capable of being extended to accommodate future grade changes without excavation. Hydrants shall have breakable type stem couplings installed at the ground line flange. Extension of this type hydrant shall be made by adding at the ground line flange a new coupling and stem section equal to the length of the extension. Stem extensions made by adding new section of stem to the threaded section of the stem at the top of the hydrant will not be accepted. Only one extension may be used. This extension may be no more than 18 inches long.*

(Page 502-8. Replace **Item 502.3.1.11. Upper Stem Thread Lubrication**, with the following: (The first sentence has been kept but the remainder of the paragraph has been deleted. A new sentence has been added at the end.))

**502.3.1.11.COD: UPPERSTEM THREAD LUBRICATION:** *Upper stem thread lubrication may be accomplished with oil or grease. When oil is used, it shall be in conjunction with a functional oil reservoir and an oil filter port. Means for field check of oil lubrication level shall be provided. When grease is used, means for field lubrication without disassembly shall be provided.*

(Page 502-8. Replace **Item 502.3.12. Tests and Affidavit of Compliance**, with the following:))

**502.3.1.12.COD: TESTS AND AFFIDAVIT OF COMPLIANCE:** *An affidavit of compliance shall be furnished to the OWNER stating that the hydrant complies in every way with the certified assembly drawings on file with the Dallas Water Utilities and with all other requirements of this specification.*

(Page 502-8. Replace **Item 502.3.1.14. Rejection**, with the following:))

**502.3.1.14.COD: REJECTION:** *Hydrostatic test required in AWWA C-502 shall be complied with. Fire hydrants may be rejected for failure to meet any of the requirements of this specification.*

(Page 502-8. Add the following:))

**502.3.1.15.COD: PROTECTION OF STEM THREADS:** *Hydrants closing against the flow or with the flow must have any stem threads protected against contact with the water. This protection can be in the form of cap nuts or lower valve washers. Cap nuts shall be locked in place to prevent loosening by normal operation of the fire hydrant.*

*If cap nuts are provided, they can be made of either bronze or ductile iron. If ductile iron cap nuts are used, a gasket must be provided to prevent seepage of water from contacting stem threads.*

(Page 502-8. Replace **Item 502.3.2. Installation and 503.3.3 Measurement and Payment**, with the following: (There are several new paragraphs added to this section, the first paragraph has been modified to include City of Dallas Standards, and most of the (original) last paragraph has been deleted.))

**502.3.2.COD: INSTALLATION:** *Fire hydrants shall be installed as shown in DWU Standard Drawing 224, in the Standard Drawings for Water and Wastewater Construction, latest edition, or as directed by the OWNER.*

*Set fire hydrant on the lot line extended when possible. The horizontal center of the hydrant shall be placed not less than 2.5-feet (0.8m) and not more than 7.5-feet (2.3m) from the nearest curb, no closer than 18-inches (0.5m) to existing or proposed sidewalks. For additional information, see the latest DWU Standards for Water and Wastewater Construction, sheet 224, and located at least 1-foot (0.3m) outside of the area between the Points of Curvature of the corner turning radii at intersections unless otherwise indicated on the plans.*

*The hydrant shall be set truly vertical and be securely braced and blocked on well-compacted or undisturbed soil surrounded by a minimum of 7-CF (0.2-m<sup>3</sup>) clean gravel or stone to permit free draining of the hydrant, with the large pumper nozzle facing the nearest curb. Fire hydrants shall be braced and blocked on a Class A or Class PA (as specified by the OWNER) concrete slab not less than 4-in. (10cm) thick and not less than 3-ft. by 3-ft. (0.9m x 0.9m) square buried to a depth between 6- and 12-inches (15cm – 30cm) below finished grade. A splash pad that extends to the sidewalk, or to curb in the absence of a sidewalk, shall be installed if directed by the OWNER. Hydrant shall be set perpendicular with the pumper nozzle facing the nearest curb, and to a depth, such that the center of the nozzle is between 18- and 28-inches (46cm – 71cm) from the top of finished grade.*

*Any adjustment needed after installation shall be made by the CONTRACTOR without extra compensation.*

**502.3.3.COD: MEASUREMENT AND PAYMENT:** Fire hydrants shall be paid for at the contract unit price per each, complete in place, as provided in the proposal and contract. The contract price shall be the total compensation for the furnishing of all labor, material, tools, equipment, hydrant extensions, and incidentals necessary to complete the work.

The hydrant lead shall be paid for at the unit price bid for installing pipe. The gate valve and box installed in leads shall be paid for at the unit price bid for installing gate valves and boxes, or as specified by OWNER.

Fire hydrant extensions shall be paid for at the unit price bid per foot if a separate pay item is established in the contract.

*Blocking shall be included in payment for fire hydrants.*

(Page 502-8. Add the following Item.)

**502.3.17.COD: HYDRANT APPROVAL:** CONTRACTOR furnished fire hydrants must be approved by the OWNER. For a list of fire hydrants by trade name or for a non-binding review of materials not shown on the list, contact:

**Materials Engineer  
Distribution Division  
4120 Scottsdale Drive  
Dallas, TX 75227  
Telephone: (214) 670-8796**

(Page 502-10. Replace **Item 502.5.1.3.Design Features of Stops and Cocks**, with the following :)

**502.5.1.3.COD: DESIGN FEATURES OF STOPS AND COCKS:** Seating surfaces of the ground key type shall be tapered and shall be accurately fitted together by turning the key and reaming the body. Seating surfaces shall be lapped together using suitable abrasives to insure accurate fit. The large end to the tapered surface of the key shall be reduced in diameter for a distance that shall bring the largest end of the seating surface of the key into the largest diameter of the seating surface of the body, and the taper seat in the body shall be relieved on the small end, so that the small end of the key may extend through to prevent wearing of a shoulder and to facilitate proper seating of the key. The stem end of the key, key nut and washer shall be so designed that if the key nut is tightened to failure point, the stem of the key shall not fracture. The nut and the stem shall withstand a torque on the nut of at least three-times the necessary effort to seat the key without failure in any manner.

**502.5.1.3.1.COD: BALL STOP:** The ball stop shall have a full-size round-way opening with straight-through flow, Teflon coated bronze ball with a minimum of 0.5-mil (0.0005-in.) (0.01mm) thickness coating. The stop must be so constructed that it may be disassembled and the ball removed without special tools. *The valve must have a positive stop to prevent damage to brass ball over opening.*

**502.5.1.3.2.COD: PLUG TYPE STOP:** Plug type stop shall have full size round way opening with straight-through flow. Seating surfaces shall be brass (or Teflon coated brass) to rubber O-rings, providing positive pressure seal without mechanical means. The stop must be so constructed that the plug may be removed without special tools. Rubber O-rings should conform to requirements of ASTM D2000 Classification System for Rubber Products in Automotive Applications and test method shall conform to ASTM D1414 for Test Methods for Rubber O-Rings.

**502.5.1.3.3.COD: INLET AND OUTLET THREADS:** Inlet and outlet threads, of the types specified, shall conform to the applicable tables of AWWA Standard C300 Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, and inlet threads shall be protected in shipment by a plastic coating or other equally satisfactory means. If used, coupling nuts shall have a bearing skirt machined to fit the outside diameter of the pipe for a length at least equal to the outside of the pipe.

**502.5.1.3.4.COD: CORPORATION STOPS:** Corporation stops shall be so designed as to rotate about the axis of the flow passageway within a circle of rotation small enough to properly clear the inside of any standard tapping machine of appropriate size.

**502.5.1.3.5.COD: CURB STOP OUTLETS:** The outlet side of ¾-in. (1.9cm) and 1-in. (2.5cm) brass curb stops shall be female iron pipe with flared copper pipe, compression, or female iron pipe thread on the inlet, as specified. The outlet side of 1-in. (2.5cm) , 1½-in. (3.8cm) and 2-in. (5.1cm) brass curb stops shall be female iron pipe with compression, solder, or female iron pipe thread on the inlet, as specified.

**502.5.1.3.6.COD: CORPORATION STOP OUTLETS:** The outlet side of ¾-in. (1.9cm) and 1-in. (2.5cm) corporation stops shall be flared copper pipe or compression with male AWWA "tapered" thread or male iron pipe thread on inlet side, as specified. The outlet side of 1½-in. (3.8cm) and 2-in. (5.1cm) corporation stops shall be compression or solder with male AWWA "tapered" thread or male iron pipe thread on inlet side, as specified.

(Page 502-11. Replace **Items 502.5.2. All Other Fittings**, and **Item 502.5.3. Measurement and Payment**, with the following:)

**502.5.2.COD: ALL OTHER FITTINGS:** *All other fittings shall conform to respective provisions of **Item 501. Underground Conduit Materials (with Addendum Items)**, listed according to conduit type. In water pipe, Ductile Iron shall consist of tees, bends, reducers, sleeves, plugs, blind flanges, etc. (note: Crosses are not allowed within the Dallas Water Utilities System.) Fittings for reinforced concrete pressure pipe, steel cylinder type, shall consist of special crosses, tees, bends, reducers, dished plugs, closure sections, flanged outlets, blind flanges, bored flanges, etc. All water pipe fittings shall be restrained type, anchored, or have retainer glands. Fire hydrant tees shall be bell-bell-flange fittings. The use of Ductile Iron Compact fittings is prohibited.*

**502.5.3.COD: MEASUREMENT AND PAYMENT:** Payment for fittings shall be made only if a separate bid item is established in the CONTRACT. If a separate bid item is not established, the fittings shall be included in the price of the pipe bid item.

*Ductile Iron Fittings shall be measured for payment per ton if a separate bid item is established in the CONTRACT. Special fittings for reinforced concrete pressure pipe, steel cylinder type, shall be measured for payment per each, grouped as to size and kind. Fittings that are an integral part of a special item, such as a bored flange in an air valve installation, shall not be measured for payment per each, but shall be included in the contract unit price for that special item. The use of Ductile Iron Compact fittings is prohibited.*

(Page 502-11. Replace **Item 502.6 VALVES** through **Item 502.6.18 Tests and Inspection**, with the following:)

**ITEM 502.6.COD: VALVES:**

**502.6.1.COD: DOUBLE-DISC, METAL-SEATED GATE VALVES FOR ORDINARY WATERWORKS SERVICE:**

**502.6.1.1.COD: GENERAL DESCRIPTION:** *This specification covers Double-Disc, Metal-Seated Gate Valves in sizes 3" through 48" which shall conform to the features and material specifications of the latest revision of the AWWA C500 Standard "Metal-Seated Gate Valves for Water Supply Service", as amended by this specification or as shown on the City of Dallas approved plans and contract documents. All materials must comply with National Standards Foundation (NSF) Standard 61 (NSF 61) – Drinking Water System Components – Health Effects. Tests and design data may be designated in the plans and contract specifications.*

- (1) **Body and Working Pressure:** *All gate valves shall be iron body, bi-directional, double disc, parallel seat, nonrising stem, internal wedging type. Valves 3" through 12" in diameter shall have a minimum design working water pressure of no less than 200 psig. Valves 16" and larger in diameter shall have a minimum design working water pressure of no less than 150 psig. Valve design shall provide minimum torque designs effectively reducing friction and drag through thrust collar design and tracks for gates.*
- (2) **Vertical Installation:** *All valves from 3" through 16" in diameter shall be designed for vertical installation with no gearing and no bypass valve*
- (3) **Horizontal Installation:** *All valves over 16" in diameter shall be designed specifically for horizontal installation. Each manufacturer shall provide design and test data as requested by the City of Dallas to allow evaluation of the appropriateness of horizontal installation of their double-disc, metal-seated gate valve prior to that valve receiving approval and being accepted by the City of Dallas. All evaluation will be conducted by the Dallas Water Utilities Department Distribution Division's Material Engineer located at 4120 Scottsdale Drive, Dallas, Texas 75227.*
- (4) **Tapping Valves:** *If tapping valves are specified, the tapping valves provided shall allow ½" undersized cutters. All tapping valves through 12" in diameter shall be designed with an alignment lip in accordance with MSS SP-60. Tapping valves 16" and larger in diameter shall have an alignment lip as requested by the City.*
- (5) **Operating Nut:** *The valve operating nut shall be painted black and shall open in a counter-clockwise direction. Each valve shall be coated in accordance with Section 2.2.8 of the AWWA C500 Standard. A bituminous coating complying with Federal Specification TT-C-494b shall be used for the exterior coating. All surfaces shall be prepared in accordance with the printed recommendations of the manufacturer of the coating, which is to be applied.*
- (6) **Waterway:** *The waterway shall be full-port.*
- (7) **Furnished Complete:** *All double-disc, metal-seated gate valves shall be furnished complete as specified, including accessories, shipping and handling costs.*
- (8) **End Configuration:** *The gate valve shall be furnished with the type of end configuration specified. The valve shall be available with Class 125 ANSI drilled flanges, mechanical joint and push-on ends per AWWA C111, or any combinations thereof.*
- (9) **Gate Valves larger than 48":** *Gate valves larger than 48" shall be a special consideration. The OWNER, at their option, may hydrostatically test all gate valves larger than 48-in. (122cm) for a reasonable period after*

receipt of a specified test pressure, or specify hydrostatic testing be performed for a time specified after receipt of a specified test pressure in the plans and contract specifications.

- (10) **CONTRACTOR Furnished Valves:** All CONTRACTOR-furnished double-disc, metal-seated gate valves must be approved by the Dallas Water Utilities Department (COD). For a list of double-disc, metal-seated gate valves by trade name or for a non-binding review of materials not shown on the list by trade name, contact:

**Materials Engineer  
Distribution Division  
4120 Scottsdale Drive  
Dallas, TX 75227  
Telephone: (214) 670-8796**

- (11) **Detailed Drawings:** Complete approved drawings, details, and specifications shall be filed with the Dallas Water Utilities Department Distribution Division prior to acceptance and approval of any valve. The drawings shall show a complete materials list, which includes the description and applicable ASTM reference for each part.
- (12) **Experience:** The manufacturer shall have a minimum of five (5) years experience in the production and sales of double-disc, metal-seated gate valves. A qualified list of customers, including the name of the organization, address, the name of a representative, and telephone number shall be submitted with the bid and available upon request.
- (13) **NSF 61 Compliance and National Standards:** All Materials must comply with National Standards Foundation (NSF) Standard 61 (NSF 61) – Drinking Water System Components – Health Effects. Additionally, all ANSI, ASTM, and AWWA Standards referred to herein shall be as last revised. In the case of conflict, this Specification shall govern.

**502.6.1.2.COD: BODY AND BONNET:** The valve body and bonnet shall be made of either gray iron per ASTM A126, Class B, or ductile iron per ASTM A536. The body and bonnet shall each be full-dimensioned, with a minimum thickness as shown in Table 2 of the AWWA C500 Standard. No thin-wall or "compact" design valves shall be acceptable. Castings shall be clean and sound with no structural defects. The following information, at a minimum, shall be cast in raised letters into the body or bonnet: Manufacturers' name or symbol, year cast, size, and rated working pressure.

**502.6.1.2.1.COD: BOLTING MATERIALS:**

- (1) All bonnet, stuffing box, and bypass valve nuts and bolts shall be factory-installed Type 316 stainless steel. Bolt heads shall be hexagonal, with dimensions conforming to ANSI B18.2.1. Nuts shall be hexagonal, with dimensions conforming to ANSI B18.2.2.

All stainless steel bolts manufactured by dropforging or welding shall be fully passivated by the Type VI passivation treatment as defined in Federal Specification QQ-P-35C (also known as the Nitric 2 treatment as defined by ASTM A967-96). The manufacturer shall have a Water Immersion Test as defined in Federal Specification QQ-P-35C and in ASTM A967-96 performed on a sample of the passivated bolts, and a Certificate of Analysis shall be provided to the OWNER.

- (2) Bolts and nuts for mechanical joints shall comply with all provisions of AWWA C111, Section 11-8.5. Bolts and nuts for flanged ends shall be either ASTM A316 stainless steel bolts and nuts or ASTM A325 Type 3 bolts with ASTM A563 Grade C3 nuts.

All stainless steel bolts manufactured by dropforging or welding shall be fully passivated by the Type VI passivation treatment as defined in Federal Specification QQ-P-35C (also known as the Nitric 2 treatment as defined by ASTM A967-96). The manufacturer shall have a Water Immersion Test as defined in Federal Specification QQ-P-35C and in ASTM A967-96 performed on a sample of the passivated bolts, and a Certificate of Analysis shall be provided to the OWNER.

**502.6.1.2.2.COD: GASKETS:**

- (1) All valves with mechanical joint ends shall be provided with full-dimensioned SBR mechanical joint gaskets in complete compliance with the cross-sectional drawing and dimensioning data contained in Figure 11.2 and Table 11.2 of the AWWA Standard C111, latest edition. No "special design" gaskets shall be acceptable.
- (2) All flanged faces shall be provided with 1/8" thick rubber ring gaskets, either of the flat design or of the "Flange-Tyte" ribbed design patented by U.S. Pipe. All ring gaskets up through 48" shall be dimensioned in accordance with Table A.1 of Appendix A of the AWWA Standard C110, latest edition.

**502.6.1.2.3.COD: GLANDS:** All valves with mechanical joint ends shall be provided with MJ glands that shall be in full compliance with all of the requirements of the AWWA C111 Standard, except that all glands shall be standard full-dimensioned glands in accordance with Figure 11.1 and Table 11.1, regardless of whether gray iron or ductile iron is used. Gland designs "incorporating reduced wall section thicknesses" shall not be acceptable.

**502.6.1.3.COD: ENDS:** Valves shall have flanged, push-on, or mechanical-joint ends, or any combination of these as may be specified.

Mechanical-joint ends shall conform to AWWA C111 (ANSI A21.11) American National Standard for Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings. Push-on joint ends shall conform to AWWA C111 (ANSI A21.11). Flanged ends shall conform to AWWA C110 (ANSI A21.10) American National Standard for Gray-Iron and Ductile-Iron Fittings, 3 In. through 48 In. for Water and Other Liquids, Class 125-lb. (862-kPa). Bolts and nuts for mechanical joints shall be of a high-strength, low-alloy corrosion-resistant steel conforming to ASTM A325 (A325M) High-Strength Bolts for Structural Steel Joints (Type 3). All mechanical-joint glands shall be ductile iron.

**502.6.1.4.COD: GATES AND RINGS:**

*Gates 3" and smaller shall be solid bronze. 4" Gates shall be either cast iron with bronze gate rings or solid bronze. All gates above 4" shall be cast iron with bronze gate rings.*

**502.6.1.5.COD: WEDGING DEVICE:**

*Wedging devices shall conform to the requirements of AWWA C500, except as follows:*

- (1) *Valves 4" and smaller shall have solid bronze wedges.*
- (2) *Valves above 4" may have solid bronze or cast iron bronze mounted wedges.*

*The bronze mounting shall be built as an integral unit mounted over or supported on a cast iron base and shall be of sufficient dimension to be structurally sound and adequate for the forces that will be imposed upon it when the valve is operated within the valve design parameters as set forth in the AWWA Standard C500. Thin plates or shapes doweled or screwed into cast iron surfaces in such a manner that the screws or dowels are designed to carry the shear stresses that will develop between the cast iron base and the bronze mounting as set forth in the AWWA Standard C500 will not be accepted.*

- (3) *Wedging surfaces on valves up to 16" shall be bronze to cast iron.*
- (4) *Wedging surfaces on valves 16" and larger shall be bronze to bronze.*
- (5) *Other moving surfaces integral to the wedging action shall be bronze to iron.*

**502.6.1.6.COD: ROLLERS, TRACKS, AND SCRAPERS FOR HORIZONTAL VALVES:**

*Rollers, tracks, and scrapers shall be in accordance with the AWWA C500 Standard.*

**502.6.1.7.COD: VALVE STEMS AND NUTS:**

- (1) **Stem:** *The stem shall be made of either:*
- (2) **Bronze:** *Bronze in accordance with Section 3.11.6 of the AWWA C500 Standard.*
- (3) **Stainless Steel.** *Stainless steel, as long as the provisions of Section 502.6.1.23.1.COD, of this Specification, Test to Failure, shall be met*
- (4) **Diameter and Number of Turns:** *The minimum diameter and number of turns to open shall be as specified in the AWWA C500 Standard.*
- (5) **Bronze Stem Collars:** *Stem collars of bronze stems shall be integral with the stem, formed of the main stem material itself either through machining of the stem or through an "upset" heat/compression process.*
- (6) **Stainless Steel Stem Collars:** *Stem collars of stainless steel stems shall be as designed by the manufacturer. Details of these stem collars, complete with dimensioned drawings, shall be made available to the City of Dallas upon request.*
- (7) **Stem Seal:** *The stem shall be sealed in accordance with the AWWA C500 Standard.*
- (8) **Stem Nut:** *The stem nut shall be inset in the gate, either integrally cast or swaged in place or retained by a T-Nut configuration. Stem nuts shall be manufactured of a bronze alloy compatible with the stem.*
- (9) **Stem Length:** *The stem shall be of such length that the threads of the stem nut are entirely engaged when the valve is in the fully closed position.*
- (10) **Stem Nut Thread Length:** *The threaded length of the stem nut shall be not less than 1.25 times the outside diameter of the stem.*

**502.6.1.8.COD: STUFFING BOXES:**

Stuffing boxes shall conform to the requirements of AWWA Standards C500 with the following exceptions: All valves 2-in. (5cm) through 16-in. (41cm) shall be equipped with double O-rings, provided arrangement is made for replacement under pressure of the upper O-ring when the valve is fully open. All geared valves shall be equipped with double O-rings in the main stuffing box. All horizontal valves shall have attached stuffing boxes as per the above AWWA Standards. Stuffing box bolts and nuts shall be 316 stainless steel.

**502.6.1.9.COD: FOLLOWER GLANDS AND GLAND BOLTS AND NUTS:**

Glands, gland bolts, and nuts shall conform to the requirements of AWWA Standards C500 with the following exceptions: Gland flanges or followers that are a separate part may be cast iron or bronze. Glands for valves over 12-in. (31cm) in diameter shall be solid bronze or cast-iron bronze bushed. Gland bolts and nuts shall be either bronze or Type 316 stainless steel. For either choice both bolts and nuts shall be of the same material

All valves with mechanical joint ends shall be provided with MJ glands which shall be in full compliance with all of the requirements of the AWWA C111 Standard, except that all glands shall be standard full-dimensioned glands in accordance with Figure 11.1 and Table 11.1, regardless of whether gray iron or ductile iron is used. Gland designs "incorporating reduced wall section thicknesses" shall not be acceptable.

**502.6.1.10.COD: HAND WHEELS AND OPERATING NUTS:**

All valves 2-in. (5cm) in diameter and above shall be nut operated unless otherwise ordered. All operating nuts shall be ductile iron or cast iron. Handwheels shall be furnished only when called for on plans or in the contract specifications. All valves shall open by turning counterclockwise.

**502.6.1.11.COD: GEARING:**

Gearing shall be in accordance with AWWA C500. Spur or bevel gearing as called for on the plans or as applicable shall be provided on all valves larger than 16-in. (41cm) in diameter and larger.

**502.6.1.12.COD: GEAR CASES.**

Gear cases shall be furnished on all geared valves. All geared valves shall be equipped with extended type gear cases, with cast iron side plates. Stuffing boxes shall be located on top of the bonnet and shall be outside the gear case. Gear cases shall be lubricated and enclosed with oil seal or O-ring at all shaft openings to prevent the entrance of water, which may be in the manhole. Valves equipped with ball or roller type thrust bearings inside the grease case shall have all shaft openings sealed with double O-rings. Gear cases shall be cast iron.

**502.6.1.13.COD: BY-PASS VALVES:**

By-pass valves shall conform to the requirements of AWWA C500 with the following exceptions: All valves larger than 16" in diameter shall be designed for horizontal installation, complete with a bypass valve, rollers, tracks, and scrapers. Properties, construction and design requirements herein specified are applicable to by-pass valves, except stems on by-pass valves over 4-in. (10cm) shall have the same physical qualities as for 30-in. (76cm) and larger.

All valves 3" through 16" in diameter shall be designed for vertical installation with no by-pass valves.

**502.6.1.14.COD: CAST IRON:**

All gray cast iron shall conform to the requirements of ASTM A126 Gray Iron Castings for Valves, Flanges, and Pipe Fittings, Class B or ductile iron shall conform to ASTM A536 Ductile Iron Castings.

**502.6.1.15.COD: HORIZONTAL VALVES:** All valves over 16-in. (41cm) in diameter shall be designated for horizontal installation in a horizontal pipeline unless shown otherwise on the plans. All other valves shall be vertical.

**502.6.1.16.COD: VALVES FOR INSTALLATION IN VERTICAL PIPELINE:** Valves 14-in. (36cm) and larger AWWA C500 valves ordered for installation in vertical pipeline shall be equipped with disc face tracks and wedge springs to prevent pre-wedging. Valves 4 in. (10.2 cm) through 12 in. (30.5 cm) shall be double disc, square-bottom valves.

**502.6.1.17.COD: TAPPING VALVES:**

Tapping valves shall conform to the requirements of AWWA C500, and the other requirements of this section with the following exceptions: Tapping valves shall have oversize seat rings to permit entry of standard tapping machine cutters. In the open position, valve gates shall be clear of the ports so that the cutter shall pass through without making contact with the gates. Valves shall have an inlet flange conforming to AWWA C110 (ANSI A21.10) Class 125, with a machined projection to mate with tapping sleeve outlet flange recess to assure correct alignment. This alignment ring shall comply with MSS Standard SP-60 Connecting Flange Joint Between Tapping Sleeves and Tapping Valves. Valves shall have standard mechanical joint outlet and shall fit any standard tapping machine.

**502.6.1.18.COD: TESTS AND INSPECTION:**

The manufacturer shall provide the City of Dallas Distribution Division with approved certified test results or a statement regarding compliance with the following tests in accordance with AWWA C500, Section 5.1.

- (1) **Hydrostatic Test:** Each valve shall be subjected to hydrostatic testing in accordance to Section 5.1.2 of the AWWA C500 Standard.
- (2) **Torque Test:** The manufacturer shall over-torque and valve off one prototype of each size in both the open and closed position to demonstrate no distortion of the valve stem or damage to the resilient seat. The applied torque shall be 250 ft-lbs for valves 4" and smaller, 350 ft-lbs for 6" through 12" valves, and 400 ft-lbs for 16" and larger valves.
- (3) **Metallurgical Testing:**
  - (a) **Independent Testing:** Subsequent to meeting all of the other requirements of this specification but prior to acceptance of the valve, the valve manufacturer may be required to furnish metallurgical analyses conducted by a qualified independent testing laboratory for verification of material compliance with all applicable ASTM designations.
  - (b) **Data Required:** The specific analyses required shall be determined by the City of Dallas on a case-by-case basis.

**502.6.1.19.COD: VERIFICATION OF COMPLIANCE WITH SPECIFICATIONS:****502.6.1.19.1.COD: DOCUMENTATION:**

Prior to any manufacturer's Double-Disc, Metal-Seated Gate Valves being approved for use by the City of Dallas, the valve manufacturer shall deliver to the Dallas Water Utilities Department Distribution Division Material Engineer at 4120 Scottsdale Drive, Dallas, Texas 75227 a formal statement which either:

- (1) Verifies and affirms the compliance of that manufacturer's Double-Disc, Metal-Seated Gate Valves with all the provisions of this Specification; **OR**
- (2) Specifically identifies each section of this Specification which is not met by that manufacturer's Double-Disc, Metal-Seated Gate Valves, and gives sufficient detailed information regarding the nature of each non-compliance to allow the City of Dallas to determine if the non-compliance is minor and can be waived, or if it is major and shall be considered a cause for rejection.

**502.6.1.20.COD: PACKAGING:**

All valves provided shall be protected during transit and storage to prevent damage to any flanges or to the coatings of the valve. For valves with one or more mechanical joint ends, all MJ nuts, bolts, glands, and gaskets shall be carefully sealed in protective "gland packs" and shipped with the valves. For valves with one or more flanged ends, the main flange nuts, bolts, and gaskets, shall be packaged separately, and shipped with the valves.

**502.6.1.21.COD: WRENCH NUTS:**

- (1) **Wrench Nuts:** Wrench nuts shall be made of either gray iron per ASTM A126, Class B, or ductile iron per ASTM A536.
- (2) **The Nut:** The nut shall be 2" square at the base, 1 15/16" square at the top, and 1 3/4" high.
- (3) **Direction of Opening:** An arrow indicating the direction of opening and the word "OPEN" shall be cast in the nut (or on the body adjacent to the nut).
- (4) **Nut Secured to Valve:** The nut shall be mechanically secured to the valve by means of a hexagonal stainless steel or bronze bolts for easy removal. A pressed pin/roll pin that requires knocking out is not acceptable.

**502.6.1.22.COD: DESIGN REQUIREMENTS:**

All valves shall be designed so that the following conditions are met:

- (1) **Input Torque:** Valves 3" and 4" in diameter shall be capable of withstanding an input torque of at least 250 ft-lbs with no permanent damage or deformation; valves 6" through 12" in diameter shall be capable of withstanding an input torque of at least 350 ft-lbs with no permanent damage or deformation; and valves 16" and larger" in diameter shall be capable of withstanding an input torque of at least 400 ft-lbs with no permanent damage or deformation.
- (2) **Test To Failure:** All parts, including the body and bonnet, shall be so proportioned that, if excessive torque is applied to the stem in the closing direction with the valve gate seated and subjected to the working water pressure, initial failure shall not occur in the valve body, valve bonnet, stuffing bonnet or seal plate. The intent of this requirement is to insure that the valve will maintain its external integrity if it is forced to failure in the closed position.

- (3) **Body/Bonnet Design:** All valves shall be designed such that the valve bonnet and the valve body have drilled, cored, or cast holes completely through the flanged mating faces that will allow the bonnet to be secured to the body with pass-through bolts and nuts. No valve that has drilled and tapped recesses in the valve body to receive the bonnet bolts is acceptable.
- (4) **Stem Replacement:** All double-disc, metal-seated gate valves shall be designed so that the stem can be replaced with the valve installed in the line, without removing the valve bonnet.

**502.6.1.23.COD: TAPPING SLEEVES:**

Tapping Sleeves shall conform to the Manufacturer’s Standardization Society standard SP-111 and the following:

**502.6.1.23.1.COD: TAPPING SLEEVES, BODY:**

- (1) Iron tapping sleeves shall be full bodied and full dimensioned. The material for the iron tapping sleeve bodies shall be gray iron or ductile iron in accordance with AWWA Standard C110.
- (2) Carbon steel tapping sleeves shall be ASTM A36, A283 or A285 carbon steel, with a minimum thickness of 3/8". Lugs shall be the triangular type design.
- (3) Stainless steel tapping sleeves shall be 18-8 type 304 stainless steel. The thickness of the front, outlet panels shall be 12-gauge minimum and the thickness of the back panels shall be 14-gauge minimum. Lugs shall be the triangular type design.
- (4) The sleeves shall be in two sections to be bolted together and dimensioned to secure proper fit on the type and class of pipe on which it is used. Sleeves shall be provided with a 3/4" N.P.T. test opening so that pressure tests can be made prior to tapping. The opening shall be provided with a 3/4" bronze plug.

**502.6.1.24.COD: FLANGES:** The branch outlet of the sleeve shall be flanged to conform to AWWA Standard C207 Class D, ANSI Class 150 and shall be in accordance with MSS-SP-60 Standards.

**502.6.1.25.COD: GASKET:**

- (1) All gaskets shall conform to ASTM Standard 2000.
- (2) The gaskets for the carbon steel tapping sleeves shall be affixed around the recess of the tap opening in such a manner as to preclude rolling or binding during installation.
- (3) The gaskets for stainless steel tapping sleeves shall be the full circumferential, 360-degree type.

**502.6.1.26.COD: BOLTS AND NUTS:**

- (1) Iron tapping sleeves shall have a minimum number and size of bolts as follows or an approved alternate:

Flange Size	Number of Bolts	Size
4"	8	3/4"
6"	8	7/8"
8"	8	7/8"
10"	12	1"
12"	12	1"
16"	16	1 1/8"
20"	20	1 1/4"
24"	20	1 3/8"

The bolts and nuts for iron tapping sleeves shall conform to AWWA Standard C111.

- (2) Carbon steel tapping sleeves shall have a minimum number and size of bolts as follows or an approved alternate:

Flange Size	Number of Bolts	Size
4"	6	3/4"
6"	6	3/4"
8"	8	3/4"
10"	10	3/4"
12"	10	3/4"

The bolts and nuts for carbon steel tapping sleeves shall conform to AWWA Standard C111. Type 316 stainless steel bolts and nuts may also be provided. If stainless steel bolts and nuts are provided, the nuts shall be coated to prevent galling.

- (3) *Stainless steel tapping sleeves shall have a minimum number and size of bolts as follows or an approved alternate:*

Flange Size	Number of Bolts	Size
4"	6	5/8"
6"	8	5/8"
8"	10	5/8"
10"	16	5/8"
12"	16	5/8"

*The bolts and nuts for stainless steel tapping sleeves shall have UNC rolled threads and be made of type 304 or 316 stainless steel. The nuts shall be coated to prevent galling.*

**502.6.1.27.COD: FINISH:** *All iron sleeves shall be coated and lined per AWWA Standard C110.*

*All carbon steel sleeves shall be fusion-bonded epoxy coated per AWWA Standard C213 to a minimum thickness of 12 mils thickness on both the exterior and the interior surfaces. The finished epoxy coat shall be free of laminations and blisters, shall not peel and shall remain pliable and resistant to impact.*

*All stainless steel sleeves shall have all welds fully passivated to restore the corrosion resistance of the stainless steel.*

**502.6.1.28.COD: PRESSURE RATING:** *The working pressure rating shall be a minimum of 150 psi.*

**502.6.1.29.COD: RESTRICTIONS:** *Carbon steel sleeves shall be restricted to use on pipe sizes 12" and larger. Carbon steel sleeves shall not be used for taps greater than 75 percent of the pipe diameter. The use of these sleeves for "size-on-size" taps is prohibited.*

**502.6.1.30.COD: NSF 61 COMPLIANCE:** *All sleeves must have received a verifiable Certification of Compliance with the NSF 61 Standard.*

#### **502.6.2.COD: RESILIENT-SEATED GATE VALVES FOR ORDINARY WATERWORKS SERVICE:**

**502.6.2.1.COD GENERAL DESCRIPTION:** *This specification covers all Resilient-Seated Gate Valves 3-in. (7.6cm) through 12-in (30.5 cm), which shall conform to AWWA Standards C509 for Resilient-Seated Gate Valves for Water-Supply Service, except for changes or specified alternatives as detailed in this specification or as shown on the plans and contract documents. Tests and design data may be as designated on the plans and contract specifications. (Note: AWWA Standard C515 for Reduced Wall, Resilient-Seated Gate Valves for Water Supply Service has specifically been removed from this specification. Reduced wall Valves and Fittings, of any type, are not approved for use in the City of Dallas.).*

- (1) *All Resilient-Seated Gate valves shall be bi-directional, non-rising stem with a minimum rated working pressure of 200 psig. Tapping valves that allow ½" undersize cutters shall be provided, if specified. All tapping valves shall be designed with an alignment lip per MSS SP-60. The valve operating nut shall be painted black and open in a counter-clockwise direction. The water way shall be full port. No recesses, insets, etc. shall be allowed in the bottom of the waterway, which would allow build-up, or collection of residue and debris.*
- (2) *All Resilient Seated gate valves shall be iron body, resilient seated, nonrising bronze stem and bronze stem nut. Valves must have the resilient seat bonded and vulcanized to the wedge and employ the best workmanship and finish. Valve design shall provide minimum torque designs effectively reducing friction and drag through thrust collar design and guide tracks for the gate.*
- (3) *Each manufacturer shall provide design and test data as requested by the City of Dallas to allow evaluation of the appropriateness of resilient wedge gate valve prior to that valve receiving approval and being accepted by the City of Dallas. All evaluation will be conducted by the Dallas Water Utilities Department Distribution Division's Material Engineer located at 4120 Scottsdale Drive, Dallas, Texas 75227.*
- (4) *All Resilient-Seated Gate Valves shall be furnished complete as specified including accessories, shipping, and handling costs. The gate valve shall be furnished with the type of end configuration specified. The valve shall be available with Class 125 ANSI drilled flanges, mechanical joint and push-on ends per AWWA C111, PVC, or any combinations thereof.*
- (5) *All Materials must comply with National Standards Foundation (NSF) Standard 61 (NSF 61) – Drinking Water System Components – Health Effects.*

**502.6.2.1.1.COD: CONTRACTOR FURNISHED VALVES:** All CONTRACTOR-furnished Resilient-Wedge gate valves must be approved by the Dallas Water Utilities Department (COD). For a list of Resilient-Wedge gate valves by trade name or for a non-binding review of materials not shown on the list by trade name, contact:

**Materials Engineer**  
**Distribution Division**  
**4120 Scottsdale Drive**  
**Dallas, TX 75227**  
**Telephone: (214) 670-8796**

**502.6.2.1.2.COD: DETAILED DRAWINGS:** Complete approved drawings, details, and specifications shall be filed with the Dallas Water Utilities Department Distribution Division prior to acceptance and approval of any valve. The drawings shall show a complete materials list, which includes the description and applicable ASTM reference for each part.

**502.6.2.1.3.COD: EXPERIENCE:** The manufacturer shall have a minimum of five (5) years experience in the production and sales of Resilient-Seated Gate Valves. A qualified list of customers, including the name of the organization, address, the name of a representative, and telephone number shall be available upon request.

**502.6.2.1.4.COD: NATIONAL STANDARDS:** All ANSI, ASTM, and AWWA Standards referred to herein shall be as last revised. In the case of conflict, this Specification shall govern.

**502.6.2.2.COD: BODY AND BONNET:** The valve body and bonnet shall be made of either gray iron per ASTM A126, Class B, or ductile iron per ASTM A536. The body and bonnet shall each be full-dimensioned, with a minimum thickness as shown in Table 2 of the AWWA C509 Standard. No thin-wall or "compact" design valves shall be acceptable. Castings shall be clean and sound with no structural defects. There shall be no plugging, welding, or repairing of defects. The following information, at a minimum, shall be cast in raised letters into the body or bonnet: Manufacturers' name or symbol, year cast, size, and rated working pressure.

**502.6.2.3.COD: ENDS:** Ends shall conform to **Item 502.6.1.3.COD Ends**.

**502.6.2.4.COD: GATE:** Gate shall be encapsulated with an elastomer that meets all requirements of AWWA C515 or C509. The bonding of the rubber to the gate shall meet the requirements of ASTM D429, Test Method A or Method B. Gates 3-in. (7.6cm) and smaller shall be rubber encapsulated bronze.

**502.6.2.5.COD: VALVE STEMS AND NUTS:** Stem and nuts shall be in accordance with AWWA Standards C515 or C509 except as follows: Stem nuts shall be of a nongalling, high-grade brass or bronze and shall have threads of sufficient length to develop the full strength of the stem. Stems as received shall meet the minimum strengths as specified. Upset stems on valves larger than 16-in. (41cm) shall not be permitted under these specifications.

**502.6.2.6.COD: STUFFING BOXES:** Stuffing boxes shall conform to the requirements of AWWA Standards C515 or C509 with the following exceptions: Arrangement is made for replacement under pressure of the upper O-ring when the valve is fully open. All geared valves shall be equipped with double o-rings in the main stuffing box. All horizontal valves shall have attached stuffing boxes as per the above AWWA Standards.

**502.6.2.7.COD: FOLLOWER GLANDS AND GLAND BOLTS AND NUTS:** Glands, gland bolts, and nuts shall conform to the requirements of AWWA Standards C515 or C509 with the following exceptions: Gland flanges or followers, if used, that are a separate part may be cast iron or bronze. Glands for valves over 12-in. (30cm) in diameter shall be solid bronze or cast-iron bronze bushed. Gland bolts and nuts shall be either bronze or Type 302 stainless steel. For either choice, both bolts and nuts shall be of the same material.

**502.6.2.7.1.COD: BOLTING MATERIALS:**

- (1) All bonnet and seal plate bolts and nuts shall be factory installed 18-8, type 304 stainless steel. Bolt heads shall be hexagonal, with dimensions conforming to ANSI B18.2.1. Nuts shall be hexagonal, with dimensions conforming to ANSI B18.2.2.
- (2) Bolts and nuts for mechanical joints shall comply with all provisions of AWWA C111, Section 11-8.5. Bolts and nuts for flanged ends shall be either ASTM A316 stainless steel bolts and nuts, or ASTM A325 Type 3 bolts with ASTM A563 Grade C3 nuts.

**502.6.2.8.COD: HAND WHEELS AND OPERATING NUTS:** Hand wheels and operating nuts shall conform to **Item 502.6.1.10.COD Hand Wheels and Operating Nuts**.

**502.6.2.9.COD: GEARING:** Gearing shall be in accordance with AWWA Standards C515 or C509. Spur or bevel gearing as called for on the plans or as applicable shall be provided on all valves 18-in. (46cm) in diameter and larger.

**502.6.2.10.COD: GEAR CASES:** Gear cases shall be furnished on all geared valves. Gear cases shall be lubricated and enclosed with oil seal or O-ring at all shaft openings to prevent the entrance of water, which may be in the manhole. Valves equipped with ball or roller type thrust bearings inside the grease case shall have all shaft openings sealed with double O-rings. Gear cases shall be gray iron or ductile iron.

**502.6.2.11.COD: BY-PASS VALVES:** By-pass valves are not required on resilient seated gate valves.

**502.6.2.12.COD: CAST IRON:** All gray cast iron shall conform to the requirements of ASTM A126 Gray Iron Castings for Valves, Flanges, and Pipe Fittings, Class B or ductile iron shall conform to ASTM A536 Ductile Iron Castings.

**502.6.2.13.COD: HORIZONTAL VALVES:** Valves for horizontal installation shall be equipped with wedge guide caps or inserts to guide and support the wedge during travel. All valves over 16-in. (41cm) in diameter shall be designated for horizontal installation in a horizontal pipeline unless shown otherwise on the plans. All other valves shall be vertical.

**502.6.2.14.COD: VALVES FOR INSTALLATION IN VERTICAL PIPELINE:** All resilient seated gate valves shall be suitable for horizontal mounting in a vertical pipeline without special modifications.

**502.6.2.15.COD: TAPPING VALVES:** Tapping valves shall conform to the requirements of AWWA Standards C515 or C509 and the other requirements of this section with the following exceptions: Tapping valves shall have a port opening to permit entry of standard tapping machine cutters. In the open position, valve gates shall be clear of the ports so that the cutter shall pass through without making contact with the gate. Valves shall have an inlet flange conforming to AWWA C110 (ANSI A21.10) Class 125, with a machined projection to mate with tapping sleeve outlet flange to assure correct alignment. This alignment ring shall comply with MSS Standard SP-60 Connecting Flange Joint Between Tapping Sleeves and Tapping Valves. Valves shall have standard mechanical joint outlet and shall fit any standard tapping machine.

**502.6.2.16.COD: TESTS AND INSPECTION:** All valves shall be tested by the manufacturer in accordance with AWWA Standards C515 or C509. Any leaking at the test pressure through any casting shall cause the said casting to be rejected. No plugging or patching to stop any leakage shall be allowed.

When requested at any time, notarized certificates of material and test compliance for these valves shall be provided. Such reports furnished shall be identified by purchase order or contract. The material shall also be identified as to location within the valve and specification or composition.

**502.6.2.16.1.COD: PROOF OF DESIGN TESTS:** The manufacturer shall provide the City of Dallas Distribution Division with approved certified test results or a statement regarding compliance with the following tests in accordance with AWWA C509, Section 5.1.

- (1) **Hydrostatic Test:** The manufacturer shall pressure test one valve of each class to 400 psi (in each direction) with the gate in the closed position and 0 psi on the opposite side. The valve shall show no sign of leakage during or upon completion of the test. No part of the valve or gate shall be permanently deformed by the test.
- (2) **Torque Test:** The manufacturer shall over-torque and valve off one prototype of each size in both the open and closed position to demonstrate no distortion of the valve stem or damage to the resilient seat. The applied torque shall be 250 ft-lbs for valves 4" and smaller, 350 ft-lbs for 6" through 12" valves.
- (3) **Metallurgical Testing:** Subsequent to meeting all of the other requirements of this specification but prior to acceptance of the valve, the valve manufacturer may be required to furnish metallurgical analyses conducted by a qualified independent testing laboratory for verification of material compliance with all applicable ASTM designations.
- (4) **Leakage Testing:** The manufacturer shall select two valves to be opened and closed for 500 cycles with a 200-psi differential pressure across the gate. The valve shall be drip-tight upon completion of the test.
- (5) **Pressure Test:** One valve of each size shall be tested by the manufacturer to 500 psi with the gate in the open position. There shall be no rupture or cracking of the valve body, bonnet, or seal plate. Leakage at pressure containing joints shall be acceptable.
- (6) **Data Required:** The specific analyses required shall be determined by the City of Dallas on a case-by-case basis.

**502.6.2.16.2.COD: VERIFICATION OF COMPLIANCE WITH SPECIFICATIONS:**

*Documentation:* Prior to any manufacturer's Resilient Wedge Gate Valve being approved for use by the City of Dallas, the valve manufacturer shall deliver a formal statement to:

**Materials Engineer  
Distribution Division  
4120 Scottsdale Drive  
Dallas, TX 75227  
Telephone: (214) 670-8796**

Which either:

- (1) Verifies and affirms the compliance of that manufacturer's Resilient-Seated Gate Valves with all the provisions of this Specification; OR
- (2) Specifically identifies each section of this Specification which is not met by that manufacturer's Resilient-Seated Gate Valves, and gives sufficient detailed information regarding the nature of each non-compliance to allow the City of Dallas to determine if the non-compliance is minor and can be waived, or if it is major and shall be considered a cause for rejection.

**502.6.2.17.COD: VALVE STEM:**

The stem shall be made of the low-zinc bronze alloy, CDA 99500 (maximum 2% zinc). The minimum diameter and number of turns to open shall be as specified in AWWA C509. Stem collars shall be integral with the stem. The stem shall be sealed with O-rings above and below the stem collar; a minimum of two such seals shall be required. The stem nut shall be inset in the gate, either integrally cast or swaged in place or retained by a T-Nut configuration. The stem nut shall be made of low-zinc bronze (maximum 7% Zinc) such as CDA 83600, CDA 99400, and CDA 99500. The stem shall be of such length that the threads of the stem nut are entirely engaged when the valve is in the closed position. The threaded length of the stem nut shall be not less than 1.25 times the outside diameter of the stem.

**502.6.2.18.COD: PACKING:** Prior to shipping, all nuts, bolts, and glands shall be assembled on the valve. The gasket shall be shipped inside the valve, sealed to protect the rubber gasket material from contamination and damage.

**502.6.2.19.COD: WRENCH NUTS:** Wrench nuts shall be made of either cast iron per ASTM A126, Class B, or ductile iron per ASTM A536. The nut shall be 2" square at the base, 1-15/16" square at the top, and 1-3/4" high. An arrow indicating the direction of opening and the word "OPEN" shall be cast in the nut (or on the body adjacent to the nut). The nut shall be mechanically secured to the valve by means of a hexagonal bolt for easy removal. A pin that requires knocking out is not acceptable.

**502.6.2.20.COD: COATINGS:**

- (1) **Interior Coating:**
  - (a) **Surface Preparation:** All interior ferrous surfaces of the valve exposed to water and subject to corrosion shall be sandblasted in accordance with Steel Structures Painting Council Specifications No. SSPC-SP5 for White Metal Blast Cleaning. Shot blasting methods shall not be used. Before sandblasting, all projections and objectionable irregularities shall be carefully removed, all sharp edges and corners shall be ground smooth, and all oil and grease shall be removed by the use of an effective solvent. After sandblasting all debris of the sandblasting process shall be removed from the surfaces to be coated. The Interior coating shall immediately follow the sandblasting and shall be one of the following epoxy coating systems.
    - (1) Specialties Engineering Corporation, Specoat SEC-EPT, brushable.
    - (2) SOC-CO Plastic Coating Company, Kesite 740, brushable.
    - (3) Minnesota Mining and Manufacturing Company, Scotchkote 302.
    - (4) Mueller Company, H.P.
  - (b) **Liquid catalyst** – cure epoxies containing no solvents, requiring no solvents, and requiring no heat curing:
    - (1) Specialties Engineering Corporation, Specoat SEC-EPT, brushable.
    - (2) SOC-CO Plastic Coating Company, Kesite 740, brushable.
    - (3) Minnesota Mining and Manufacturing Company, Scotchkote 302.
    - (4) Mueller Company, H.P.
  - (c) **Powder, fusion bounded epoxies, thermosetting.**
    - (1) Minnesota Mining and Manufacturing Company, Scotchkote 134, Fluid Bed application.
    - (2) Minnesota Mining and Manufacturing Company, Scotchkote 203, Fluid Bed application.
  - (d) **Coating Thickness:** The coating shall be applied in accordance with the manufacturer's printed instructions and shall have a dry-film thickness of not less than 9mm or more than 20mm. The coating shall be applied to all stationary interior ferrous surfaces including all interior openings in the valve body. Coating shall not be applied to the gasket surfaces of the end flanges. After the coating is completely cured, the coated surface shall be tested for porosity, holidays, and pinholes, using a holiday detector set at 1800 volts. All holidays or irregularities shall be repaired and the coating tested again.
  - (e) **Surface Preparation – Exterior:** The exterior ferrous surfaces of each valve shall be coated as detailed in Article III of these specifications, except that the surfaces shall be sandblasted to SSPC-SP6 (Commercial Grade) requirements prior to coating.
  - (f) There is no requirement for Certification of Compliance with the NSF 61 Standard for exterior coatings.

**502.6.2.21.COD DESIGN REQUIREMENTS:** All valves shall be designed so that the following conditions are met:

- (1) *Input Torque.* Valves 3" and 4" in diameter shall be capable of withstanding an input torque of at least 250 ft-lbs with no permanent damage or deformation; valves 6" through 12" in diameter shall be capable of withstanding an input torque of at least 350 ft-lbs with no permanent damage or deformation.
- (2) *Test to Failure.* All parts, including the body and bonnet, shall be so proportioned that, if excessive torque is applied to the stem in the closing direction with the valve gate seated and subjected to the working water pressure, initial failure shall not occur in the valve body, valve bonnet, stuffing bonnet or seal plate. The intent of this requirement is to insure that the valve will maintain its external integrity if it is forced to failure in the closed position.
- (3) *Body/Bonnet Design.* All valves shall be designed such that the valve bonnet and the valve body have drilled, cored, or cast holes completely through the flanged mating faces, which will allow the bonnet to be secured to the body with pass-through bolts and nuts. No valve, which has drilled and tapped recesses in the valve body to receive the bonnet bolts is acceptable.
- (4) *Seal Plate Design.* All valves with seal plates on top of the valve bonnet shall be designed such that the seal plate is secured to the bonnet with pass-through bolts and nuts. No valve, which has drilled and tapped recesses in the valve bonnet to receive the seal plate bolts is acceptable. The seal plate and seal plate bolts shall be designed so that there is 0.50 inches and 1.00 inches of clearance between the bottom of the operating nut and the top end of the seal plate bolts.
- (5) *Stem Replacement.* All double-disc, metal-seated gate valves shall be designed so that the stem can be replaced with the valve installed in the line, without removing the valve bonnet.

**502.6.2.22.COD: WEDGE:** The wedge shall be made from either ductile iron per ASTM A536 or gray iron per ASTM A126, Class B, with guide bars or channels for controlled movement, and may have an integrally cast bronze stem nut. The wedge shall be ruggedly constructed for resistance to deflection.

**502.6.2.23.COD: ENCAPSULATION:** The wedge and wedge guide bars or channels shall be fully encapsulated by a resilient rubber material bonded to the metal. The wedge stem hole, if not also encapsulated, shall be epoxy coated.

- (1) The method used to prove the rubber-to-metal bond shall be in accordance with the requirement of ASTM D429, Method B. The peel strength shall not be less than 75 pounds per inch.
- (2) The wedge guide encapsulation may consist of a harder grade of ebonite rubber or contain thermoplastic guide inserts.

**502.6.3.COD: AIR VALVES:**

**502.6.3.1.COD: GENERAL:** Unless otherwise indicated in the plans or contract specifications, air valves shall meet the requirements of AWWA C512 Air Release, Air/Vacuum and Combination Air Valves for Water Works Service with exceptions specified herein. Only wastewater air valves shall be used for wastewater applications.

**502.6.3.2.COD: DESCRIPTION:** Air valves shall be of two types as follows:

- (1) An air valve called for on the plans shall mean an air and vacuum valve of the ball type designed to permit the escape of air from a pipeline when the line is being filled and to permit air to enter the pipeline when the line is being emptied.
- (2) A combination air valve called for on the plans shall mean a combination air and vacuum and air release valve designed to fulfill the functions of air and vacuum valve and designed to permit the escape of air accumulated in the line at the high point when the line is under pressure while in operation. Air valves 3-in. (7.6cm) and smaller shall be self-contained in one unit. Air valves larger than 3-in. (7.6cm) may be a combination of two valves.

**502.6.3.3.COD: MATERIAL:** The valves shall be stainless steel or iron body, stainless steel, brass or bronze fulcrum levers and links, stainless steel ball floats and pins, steel flange bolts and nuts, Buna-N synthetic rubber seats or equal against bronze or stainless steel, and brass for other parts.

**502.6.3.4.COD: INLETS AND OUTLETS:** Inlets shall be threaded for 2-in. (5cm) and smaller and flanged for 3-in. (7.6cm) and larger. Outlets shall be threaded through 4-in. (10cm).

**502.6.3.5.COD: OPERATING PRESSURE AND TESTING:** The valves shall be designed to operate under an operating pressure of 150-psi (1034-kPa) and shall be tested to 1½ times that pressure.

**502.6.3.6.COD: NSF 61 COMPLIANCE:** All air valves must have received verifiable Certification of Compliance with the NSF 61 Standard

**502.6.4.COD: BRASS WHEEL VALVES:**

**502.6.4.1.COD: GENERAL:** Valves furnished under this specification shall be wedge disc, non-rising stem gate valves with screwed ends. They shall be equipped with bronze hand wheels and nuts and shall have bronze packing gland followers. They shall be of all brass and/or bronze construction.

**502.6.4.2.COD: PRESSURE RATING:** Valves shall be rated for 125-psi (862-kPa) saturated steam working pressure and 200-psi (1,380-kPa) for liquids and gases up to 150°F (65.6°C).

**502.6.4.3.COD: TESTS:** Each valve furnished under these specifications shall be tested at a hydrostatic pressure of 250-psi (1,724-kPa) with the valve open. Under this test, the valve shall not show any indication of leakage at the packing or anywhere on the body. Each valve shall also be tested at hydrostatic pressure of 250-psi (1,724-kPa) applied to one end only with the valve closed. There shall be no indication of leakage by the gate or through the packing under this test.

**502.6.4.4.COD: DIRECTION TO OPEN:** Valve shall open by turning the handwheel counterclockwise.

**502.6.4.5.COD: MATERIAL SPECIFICATIONS:**

The materials used in the manufacture of these valves shall equal or exceed the specifications shown in Table 502.6.4.5.(a) Brass Wheel Valve Materials.

**Table 502.6.4.5.(a). COD: Brass Wheel Valve Materials**

<i>Part</i>	<i>Material</i>	<i>Designation/Specification</i>
Packing	Teflon impregnated asbestos or approved equal	
Body	Bronze	ASTM B62 Standard Specification for Composition Bronze or Ounce Metal Castings
Bonnet	Bronze	ASTM B62
Gates	Bronze	ASTM B62
Handwheel	Bronze	ASTM B62
Handwheel Nut	Bronze	ASTM B62
Gland & Packing Nut	Brass	ASTM B16/B16M Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines
Stem	Bronze	ASTM B62, 50,000=psi (344,700-kPa) minimum tensile strength.

**502.6.4.6.COD: STEM:** Stem shall be completely free of visible flaw, and matching shall be smooth and free of defect. A back-seating surface shall be provided on the wedge or on the lifting nut to seat tightly against the bonnet when the valve is open to seal the packing gland against line pressure so that the valve may be repacked against line pressure.

**502.6.4.7.COD: SCREWED ENDS:** Valve ends shall be threaded internally with American National Taper pipe threads. Thread shall be clean, smooth, true to form, and concentric with the axis of the valve. Variations in alignment of thread shall not exceed 1/16-in.-per-foot (0.5-cm-per-m). Thread shall be chamfered approximately to the major diameter of the thread at the face of the valve at an angle approximately 45° with the axis of the thread for the purpose of easy entrance in making a joint and for protection of the thread.

**502.6.4.8.COD: VALVE BODY:** The body of the valve shall offer sufficient support to the gate while it is moving to keep the gate wedge in place and to align accurately the gate on the body seat. The waterway opening shall be equal to or greater than the nominal pipe size.

**502.6.4.9.COD: GATE:** The gate shall be of wedge design and may be furnished either solid or two-piece. Two-piece or "split" disc gates shall be equipped with lifting nut. Gate faces shall be accurately machined and fitted into the valve body in such a manner that the center of the gate circle is very slightly above the center of the seat circle when the valve is tightly closed.

**502.6.4.10.COD: WORKMANSHIP:** All valve parts shall be true to form, free from injurious defects and shall be seated and finished in a workmanlike manner. Casting shall be free from blowholes, porosity, hard spots, excessive shrinkage, cracks, or other injurious defects. They shall be smooth and well cleaned both inside and outside, and all fins and similar roughness shall be removed. Castings shall not be repaired, plugged, brazed, or burned in.

**502.6.4.11.COD: PACKAGING:** Valve shall be closed for shipment and wrapped or packaged in accordance with best commercial practice as necessary for mechanical protection and ease in handling.

**502.6.5.COD: RUBBER SEATED BUTTERFLY VALVES:**

**502.6.5.1.COD: GENERAL DESCRIPTION:** *This specification covers Rubber Seated Butterfly Valves in sizes 10" through 120" which shall conform to the features and material specifications of the latest revision of the AWWA C504 Rubber Seated Butterfly Valves Standard, as amended by this specification or shown on the City of Dallas plans and contract documents.*

- (1) *These valves shall be suitable for fresh water having a pH greater than six and a temperature less than 125°F.*
- (2) *All valves shall be designed for a maximum steady-state fluid working pressure of 150 psig and a maximum steady-state differential pressure of 150 psig.*
- (3) *All valves shall be Class "B" valves designed for a maximum velocity of no less than 16 feet per second.*
- (4) *All valves shall be of the short-body full-flanged face design, with Class 125 ANSI drilled flanges.*
- (5) *The valve operating nut shall be painted black and shall open in a counter-clockwise direction.*
- (6) *All butterfly valves shall be furnished complete as specified including accessories, shipping, and handling costs.*
- (7) *Type of body shall be short body, flanged.*
- (8) *Body material shall be cast iron or ductile iron.*
- (9) *Class shall be as specified on the plans or contract specifications.*
- (10) *Shafts shall be Type 304 stainless steel.*
- (11) *Flange holes shall be drilled full size.*
- (12) *Valve seats shall be natural rubber or Buna-N and polished stainless steel, Type 316, 90° seating angle only, with a 360° uninterrupted seating surface.*
- (13) *Shaft seals shall be standard split-V packing or double O-ring seal cartridges.*
- (14) *Discs shall be ductile iron, cast iron, or fabricated steel.*
- (15) *Operating nuts shall be ductile iron.*
- (16) *NATIONAL STANDARDS FOUNDATIONS (NSF) STANDARD 61 COMPLIANCE. All valves must have received a verifiable Certification of Compliance with the NSF 61 Standard.*
- (17) *National Standards. All ANSI, ASTM, and AWWA Standards referred to herein shall be as last revised. In the case of conflict, this Specification shall govern.*

**502.6.5.2.COD: QUALITY ASSURANCE:** The following shall be furnished to the OWNER. Incomplete data shall be cause for rejection of bid.

- (1) *Each manufacturer who provides butterfly valves under this specification shall have an approved Quality Assurance Program for controlled manufacturing in effect at the manufacturer's facility throughout the manufacturing cycle. This Quality Assurance Program shall conform to a nationally recognized standard for quality assurance programs and shall apply to all phases of manufacturing from procurement of materials through shipping of the completed product.*
- (2) *All materials used for bodies, discs, seats (resilient and metal), and shafts shall be certified by the material SUPPLIER. Certification shall consist of the results of chemical and mechanical property tests, which conform to a detailed Quality Assurance Manual. The Manual shall be available for review and the manufacturing facility available for a quality audit at the convenience of the OWNER. A Quality Assurance Manual shall be included in the required submittals.*

- (3) **CONTRACTOR-Furnished Valves.** All CONTRACTOR-furnished butterfly valves must be approved by the Dallas Water Utilities Department (DWU). For review of valves and materials contact:

**Materials Engineer  
Distribution Division  
4120 Scottsdale Drive  
Dallas, TX 75227  
Telephone: (214) 670-8796**

**502.6.5.2.1.COD: DETAILED DRAWINGS:**

Complete approved drawings, details, and specifications shall be filed with the Dallas Water Utilities Department Distribution Division prior to acceptance and approval of any valve. The drawings shall contain dimensional data on all components of the valve and shall show a complete materials list, which includes the description and applicable ASTM reference for each part. The Drawings shall include, but not limited to, the following:

- (1) Weights and drawings in accordance with AWWA C504.
- (2) Guaranteed delivery time after receipt of purchase order.
- (3) Number of turns of handwheel required to close valve.
- (4) The required actuator torque ( $T_o$ ) in foot-pounds for each butterfly valve based on the specified operating conditions of pressure and flows.
- (5) Seating-unseating torque ( $T_o$ ) in foot-pounds required for each butterfly valve.
- (6) Rated torque capability of each butterfly valve actuator.
- (7) Experience: evidence of at least five years satisfactory experience building butterfly valves to AWWA Standards.
- (8) Torque tests in accordance with rubber seated butterfly valves AWWA C504.
- (9) Proof of design tests in accordance with AWWA C504.

**502.6.5.2.2.COD: EXPERIENCE:** The manufacturer shall have a minimum of five (5) years experience in the production and sales of AWWA C504 Rubber Seated butterfly Valves. A qualified list of customers, including the name of the organization, address, the name of a representative, and telephone number shall be available upon request

**502.6.5.2.3.COD: MATERIALS:**

- (1) **Body:** The valve body shall be made of either gray iron per ASTM A48 Class 40 or ASTM A126 Class B, or ductile iron per ASTM A536, Grade 65-45-12, or Grade 70-50-05.
- (2) **Disc:** Valve discs for valves 10" through 66" in diameter shall be manufactured of ASTM A536 Grade 65-45-12 ductile iron. Valve discs for valves 72" through 120" in diameter shall either be manufactured of ASTM A536 Grade 65-45-12 ductile iron or may be of ASTM A516 Grade 60 fabricated steel.
- (3) **Valve Seat:** The resilient valve seats shall be of Buna-N synthetic rubber. The mating seat surface, integral with the valve body or contained on the disc edge, shall be 18-8, Type 304 stainless steel. Sprayed or plated mating seat surfaces are not acceptable.
- (4) **Valve Shaft:** Valve shafts shall be manufactured of 18-8, type 304 stainless steel.
- (5) **Shaft Bushings.** Shaft bushing material shall be as recommended by the manufacturer provided that bushing material is disclosed to the OWNER and approved by the OWNER prior to the manufacturer of any valves for provision under this specification. (See Section V.F. of this Specification.)
- (6) **Bolting Materials:**
  - (a) All valves from 10" through 48" in diameter shall be provided with ASTM A325 Type 3 Weathering Steel heavy hex main flange bolts dimensioned in accordance with ANSI Standard B.18.2.1. All nuts for the ASTM A325 Type 3 flange bolts shall be ASTM A563, Grade C3 Weathering Steel heavy hex nuts dimensioned in accordance with ANSI Standard B.18.2.2. As an alternative, the main flange bolts and nuts may be of Type 316 stainless steel, dimensioned in accordance with ANSI Standards B.18.2.1. and B.18.2.2.
  - (b) All valves from 54" through 120" in size ordered with flanged end configurations shall be provided with Type 316 stainless steel heavy hex flange bolts. Bolt heads shall be hexagonal, with dimensions conforming to ANSI B18.2.1. All nuts shall be Type 316 stainless steel heavy hex, with dimensions conforming to ANSI B18.2.2.

- (c) *All stainless steel bolts manufactured by drop-forging or welding shall be fully passivated by the Type VI passivation treatment as defined by Federal Specification QQ-P-35C (also known as the Nitric 2 treatment as defined by ASTM A967-96) or by the Type VII passivation treatment as defined by Federal Specification QQ-P-35C (also known as the Nitric 3 treatment as defined by ASTM A967-96). A Water Immersion Test as defined in Federal Specification QQ-P-35C and in ASTM A967-96 shall be performed on a sample of the passivated bolts, and a Certificate of Analysis provided.*
- (7) **Gaskets:** *All valves with flanged ends shall be provided with  $\frac{1}{8}$ " thick rubber ring gaskets of the "Flange-Tyte" ribbed design patented by U.S. Pipe, or an approved equal. All ring gaskets shall be dimensioned in accordance with Table A.1 of Appendix A of the AWWA Standard C110, latest edition.*
- (8) **Wrench (Operating) Nut:**
- (a) *The wrench nut shall be made of either gray iron per ASTM A126, Class B, or ductile iron per ASTM A536.*
- (b) *The nut shall be 2" square at the base, 1 15/16" square at the top, and 1 3/4" high.*
- (c) *An arrow indicating the direction of opening and the word "OPEN" shall be cast in the nut (or on the body adjacent to the nut).*
- (d) *The nut shall be mechanically secured to the valve by means of hexagonal stainless steel or bronze bolt for easy removal. A pressed pin/roll pin that requires knocking out is not acceptable.*

#### **502.6.5.2.4.COD: COATINGS:**

##### **502.6.5.2.4.1.COD: INTERIOR COATINGS:**

- (1) **Surface Preparation:** *All interior ferrous surfaces of the valve exposed to water and subject to corrosion shall be prepared in accordance with the printed recommendations of the manufacturer of the coating, which is to be applied.*
- (2) **Coating System Compliance:** *The interior coating system shall comply with the AWWA C550 Standard, shall immediately follow the surface preparation, and shall be a coating system, which has received Certification of Compliance with the NSF 61 Standard for this particular application.*
- (3) **Coating Thickness:** *The coating shall be applied in accordance with the coating manufacturer's printed instructions. The finished dry thickness of this coating in mils shall be within the range recommended by the manufacturer. The coating shall be applied to all stationary interior ferrous surfaces including all interior openings in the valve body. The coating shall not be applied to the gasket surfaces of the end flanges.*
- (4) **Coating Integrity:** *After the coating is completely cured, the coated surface shall be tested for porosity holidays and pinholes in accordance with Section 5.1 of the AWWA C550 Standard. All holidays or irregularities shall be repaired in accordance with the coating manufacturer's printed instructions and the coating again tested. This process shall be repeated until the coating passes the holiday test.*
- (5) **Coating Documentation:** *Upon request, the valve manufacturer shall furnish to the City of Dallas specific data on:*
- (a) *The coating system used, including the name of the manufacturer of the coating system and the specific coating system designation.*
- (b) *A copy of the coating manufacturer's printed surface preparation and application instructions.*
- (c) *Verification of Certification of Compliance with the NSF 61 Standard for this application of this coating.*
- (d) *Verification that all valves supplied have in fact passed the Coating Integrity Test required by Section III D of this specification.*
- (e) *A copy of the coating manufacturer's printed instructions for the valve manufacturer's repair of holidays and pinholes, which are detected in the coating.*
- (f) *A copy of the coating manufacturer's printed instructions for field repair of damage to the coating.*

##### **502.6.5.2.4.2.COD: EXTERIOR COATINGS:**

- (1) **Surface Preparation.** *All exterior surfaces shall be prepared in accordance with the printed recommendations of the manufacturer of the coating, which is to be applied.*
- (2) **Coating System.** *The exterior ferrous surfaces of each valve shall be coated in accordance with the AWWA C 504 Standard, as detailed below:*
- (a) *Two different exterior coating systems will be required, depending upon where the valve is to be installed:*

- (1) *Unless otherwise specified, the exterior of the butterfly valve shall, at a minimum, be shop coated with a suitable metal primer to a dry film thickness of not less than three (3) mils. Flange faces shall be protected from atmospheric corrosion. If the manufacturer wishes, the exterior of the butterfly valve may be coated with the valve manufacturer’s standard exterior paint/epoxy coating system in lieu of just a primer coat.*
- (2) *For butterfly valves which are ordered direct by the City of Dallas and destined for direct-burial applications, a two-coat asphaltic emulsion exterior coating in accordance with Section 4.2.2.1 of the AWWA C 504 Standard shall be called for in the valve order. The asphaltic emulsion shall conform to Federal Specification TT-C-494b.*
- (b) *There is no requirement for Certification of Compliance with the NSF 61 Standard for any exterior coatings.*

**502.6.5.2.5.COD: DESIGN REQUIREMENTS:**

*All valves shall be designed so that the following conditions are met:*

**502.6.5.2.6.COD: FLANGES:** *The dimensions and drilling of end flanges shall conform to ASME/ANSI B16.1, Class 125, with full-sized boltholes through the flanges.*

**502.6.5.2.7.COD: BODY:** *Regardless of whether gray iron or ductile iron is used for the body, the body shall be full-dimensioned, with a minimum body shell thickness as shown in Table 2 of the AWWA C504 Standard. No thin-wall or “compact” design valves shall be acceptable. Castings shall be clean and sound with no structural defects. The following information, at a minimum, shall be cast in raised letters into the body: Manufacturers’ name or symbol, year assembled, size, rated working pressure, and direction of flow.*

**502.6.5.2.8.COD: DISC:** *Butterfly valve discs for valves 30" in diameter and larger shall be of the “off-set” design in order to provide a full 360-degree seating surface, uninterrupted by the shaft holes. Discs for valves of all sizes shall be designed so that there are no external ribs transverse to the flow direction.*

**502.6.5.2.9.COD: VALVE SEAT:**

- (1) *For all sizes of valves.*
  - (a) *The resilient Buna-N seat shall be incorporated in the valve disc edge or in the valve body.*
  - (b) *Resilient seats shall be mechanically retained by means of stainless steel clamps, stainless steel rings, and 18-8 stainless steel bolts.*
  - (c) *Resilient seats shall be capable of mechanical adjustment in each direction without the use of special tools.*
  - (d) *Resilient seats must also be capable of replacement in the field without chipping, grinding, or burning out the old seat . No seat retention designs, which utilize bonded seats or epoxy injection for a wedging action against the resilient seat, or which require any “setting” or “curing” time shall be acceptable.*
- (2) *For valves 30" and larger, replacement of the mechanically retained resilient seat shall be possible without removing the valve from the system.*

**502.6.5.2.10.COD: VALVE SHAFT:**

*Valve shafts for valves 30" and larger shall be of the two-piece type extending into the valve disc hubs for a distance of at least one and one-half-shaft diameters. Valves smaller than 30" in diameter may have solid one-piece shafts. In all cases and for all sizes of valves, the minimum valve shaft diameter shall be as specified in the AWWA C504 Standard, latest edition; or as specified below:*

Valve Size	Minimum Shaft Diameter
78"	9.25"
84"	10.00"
90"	10.75"
96"	11.50"
102"	12.00"
108"	12.75"
114"	13.50"
120"	14.25"

**502.6.5.2.11.COD: SHAFT BUSHINGS:**

Valve shaft bushings shall be designed by the manufacturer to insure that they provide effective, long-lasting bearing surfaces for the support of the valve shaft without binding, dragging, or damaging the shaft under continuous full pressure differential loading conditions. Shaft bushings shall be contained in the integral hubs of the valve body and shall be of a one-piece "self-lubricated sleeve" design constructed of bronze-backed P.T.F.E. material, or an approved equal. No alternate valve shaft bushing design will be accepted by the City of Dallas until detailed drawings, materials data, and performance test results on the alternate bushing have been provided to, analyzed by, and accepted by the City of Dallas.

**502.6.5.2.12.COD: SHAFT THRUST BEARING:**

Butterfly valves 30" in diameter and larger shall be furnished with a factory-set two-way thrust bearing on the valve shaft which shall be capable of being adjusted in the field without re-drilling, without re-pinning, and without the use of special tools.

**502.6.5.2.13.COD: SHAFT SEALS:**

- (1) On valves of all sizes, where the valve shaft projects through the body of the valve for the actuator connection, a shaft seal shall be provided. This seal may be of either design stated below:
  - (a) The seal may be of the type utilizing a stuffing box and pull down packing gland so that the packing can be adjusted or completely replaced without disturbing any part of the valve or actuator assembly except the packing gland follower. Packing shall be of the non-asbestos self-adjusting split-V or square type.
  - (b) The seal may be of the self-adjusting Chevron design.
- (2) Where the valve shaft engages the thrust bearing, the valve shall be equipped with a thrust stub shaft cover or stub shaft end cover utilizing either an O-Ring seal or an asbestos-free gasket to prevent leakage. The use of packing and/or thread seal washers to prevent leakage is not acceptable.

**502.6.5.2.14.COD: SHAFT TORQUE CAPABILITY:** Valves up through 72" in diameter shall be capable of withstanding the shaft torques tabulated under Class 150B in Table 4 of the AWWA C504 Standard, at a minimum, without deformation or damage. The shafts of valves larger than 72" in diameter shall meet the material and dimensional specifications called out in this specification.

**502.6.5.3. ENDS:** Valves shall have flanged ends. Flanged ends shall conform to AWWA C110 (ANSI A 21.10), Class 250-lb. (112.5-kg).

**502.6.5.4.COD: VALVE ACTUATORS:****502.6.5.4.1.COD: MANUAL ACTUATORS:**

Manual valve actuators shall be Limitorque, or an approved equal. All manual actuators shall be equipped with a wrench-operating nut as specified in **Item 502.6.5.2.3.COD(8): MATERIALS**.

- (1) **Location:** All actuators shall be located at the right end of a horizontal shaft with the input shaft vertical and upward looking in the direction of flow, unless otherwise noted.
- (2) **Closure:** The valve shall close by turning the input shaft clockwise. All handwheels shall turn clockwise to close the valve. All operators shall be equipped with a disc position indicator with each valve. The indicator shall be highly visible, clearly showing the legends "Open" and "Closed" at the ends of a 90° arc, with a pointer to show the disc position (Closed — 0° and Open —90°). The arc shall be graduated in degrees.
- (3) **Type:** All manual actuators shall be totally enclosed worm gear type and traveling-nut type. All manual worm gear type actuators shall be Limitorque, Type HBC or approved equal.
- (4) **Sizing:** Each valve actuator shall be sized for the maximum valve torque requirements based on the operating pressures and flow rates as specified.

**502.6.5.4.1.1.COD: DESIGN:** Valve actuators shall conform to the AWWA C504 Standard and shall be designed to hold the valve in any intermediate position between full open and full closed without creeping or fluttering. Valve actuators shall be of the worm gear design.

**502.6.5.4.1.2.COD: TEST RESULTS:** Valve actuator manufacturers shall provide results of tests performed on actuators, in accordance with Sections 3.8.3 and 3.8.5.5 of the AWWA C504 Standard. Valve manufacturers shall submit maximum torque requirements at operating and design conditions.

**502.6.5.4.1.3.COD: POSITION INDICATOR:** Valve actuators shall be equipped with a closed and open indicator. The indicator shall be raised, clearly showing the legends "Open" and "Closed" at the end of a 90 degree arc with a pointer to show the disc position (Closed at 0 degrees and Open at 90 degrees) and the arc graduated in increments of ten degrees.

**502.6.5.4.1.4.COD: DIRECTION OF OPERATION:** Clockwise direction shall close the valve and counter-clockwise direction shall open the valve. The valve actuator shall be located on the side of the valve, suitable for vault service or above ground service.

**502.6.5.4.2.COD: ELECTRIC MOTOR ACTUATORS:**

Electric valve actuators, where required, shall be Limitorque or an approved equal and shall have a NEMA 4 enclosure, position indicator, 360 second timing for opening and for closing, torque switches in series, manual override hand wheel, four 4-train geared limit switches (16 total), reversing starter, and three (3) button two (2) light push button control station.

- (1) All electric actuators shall be designed for multiple-voltage operation with 208/220/480 Volt, 3 Phase, 60 Hertz power.
- (2) All electric actuators shall be sized for operation with 208 Volt power.
- (3) Electric Actuators shall not be sealed for submerged operation.
- (4) COD Each order for valves with electric actuators, which utilize a modulating position controller (time-pulsed operation), shall be accompanied by everything that is necessary to change the factory default settings beyond the ranges allowed by DIP switch settings, including but not limited to one set of all necessary serial cables, serial interface adapters, Modsim manuals, and Modsim software.
- (5) Each order for valves with electric actuators which utilize a modulating position controller (time-pulsed operation) shall be accompanied by everything that is necessary for trouble-shooting or correcting any problems which may occur in the computerized actuator, including but not limited to one set of all diagnostic tools available from the actuator manufacturer designed for this application, such as the Limitorque UEC3 Universal Diagnostic Tool (UDT).
- (6) Each electric actuator shall conform to AWWA C504 and shall be of sufficient size to open and close the valve against maximum differential pressure and maximum required torque conditions when voltage at motor terminals is 90-percent of nominal voltage and shall have totally enclosed worm gear reducer with spur gear attached. Limit switches shall be of the four train gear with switches adjustable to operate at any point in the opening or closing cycle of the valve.
- (7) Limit switches and torque switches shall be located in a special compartment that is an integral part of the actuator and shall be readily accessible. Each limit switch shall have two normal closed contacts. Limit switch gearing shall be in step at all times whether in power or manual operation. Limit switch gearing shall be stainless steel or high-grade bronze. Two torque switches shall be furnished, one for opening direction and one for closing direction. The torque switches shall be connected in series so that they will operate regardless of the phasing of the power.
- (8) Torque and thrust loads in both closing and opening directions shall be limited by torque switches. Each torque switch shall be provided with a micrometer adjustment and reference-setting indicator. The adjustment shall permit a variation of approximately 40-percent in torque setting. Switches shall have a rating of not less than 6-amperes at 120-volts-a.c. and 2.2-amperes at 115-d.c. The torque switches shall be in series with the opening and closing coils of the starter.
- (9) The torque switches shall be factory adjusted by the manufacture for this application.
- (10) A handwheel for manual operation shall be provided. Motor shall not rotate when handwheel is in use. A fused motor shall not interfere with manual operation. For valve control, furnish for each valve a reversing starter in watertight enclosure that is integral with the actuator housing. Furnish a push-button station NEMA-4 with red and green indicating lights separate from the valve actuator. Space heaters shall be provided to protect the motor, reversing starter and limit switch compartments from moisture condensation. Valve control wiring diagrams shall be furnished with submittal data.
- (11) Valve actuators shall conform to latest revision of AWWA C504 and shall be designed to hold the valve in any intermediate position between fully opened and fully closed without creeping and fluttering

**502.6.5.4.3.COD: OTHER ACTUATORS:** Other types of actuators shall conform to AWWA C504.

**502.6.5.4.4.COD: SUBMERGED ACTUATOR:**

Unless otherwise specified, all manual actuators must be capable of being submerged in groundwater and operated without causing damage.

- (1) **Location:** All actuators shall be located at the right end of a horizontal shaft with the input shaft vertical and upward looking in the direction of flow, unless otherwise noted.

- (2) **Closure:** The valve shall close by turning the input shaft clockwise. All handwheels shall turn clockwise to close the valve. All operators shall be equipped with a disc position indicator with each valve. The indicator shall be highly visible, clearly showing the legends "Open" and "Closed" at the ends of a 90° arc, with a pointer to show the disc position (Closed — 0° and Open —90°). The arc shall be graduated in degrees.
- (3) **Type:** All manual actuators shall be totally enclosed worm gear type and traveling-nut type. All manual worm gear type actuators shall be Limitorque, Type HBC or approved equal.
- (4) **Sizing:** Each valve actuator shall be sized for the maximum valve torque requirements based on the operating pressures and flow rates as specified.

**502.6.5.4.5.COD: PACKAGING:**

- (1) **Nuts and Bolts:** *The main flange bolts and nuts shall be packaged separately and shipped with the valve when it is delivered.*
- (2) **Gaskets:** *All flange gaskets shall be shipped inside the valve, sealed to protect the rubber gasket material from contamination and damage.*
- (3) **Valves:**
  - (a) *All valves provided shall be protected during transit and storage to prevent damage to the valves. The manufacturer shall ship each valve with full-face flange protectors of 3/4" exterior grade plywood or pressboard securely fastened over the flange faces to protect them during shipment. Valves larger than 36" shall be bolted or otherwise fastened to skids to preclude damage in subsequent handling. Small valves may be fully packaged at the manufacturer's option to prevent damage.*
  - (b) *Valves shall only be lifted by utilizing clevis devices through the valve flange, or by forklift for those valves that are on pallets. In no case shall any valves be lifted by the actuator or by the valve shaft.*
  - (c) *Shipment and Storage Requirements. Electric motor actuated valves shall be shipped to bonded, covered warehouse storage to be designated by the OWNER. Valves shall be stored indoors and shall have space heaters energized. Full-face flange protectors of waterproof plywood shall be at least one-inch (2.5cm) thick. (From Ver 4.0)*

**502.6.5.4.6.COD: ACCESSORIES:**

- (1) *Bolts and Nuts. A full compliment of main flange heavy hex bolts and nuts as specified in Section II.F.(1) and (2) of this Specification shall be provided with each flange valve.*
- (2) *Gaskets. All valves with flanged ends shall be provided with a full compliment of ribbed ring gaskets as specified in Section II.G. of this Specification.*

**502.6.5.4.7.COD: PRODUCTION TESTS:**

*The manufacturer shall provide the City of Dallas Distribution Division with approved certified test results or a statement regarding compliance with the following tests in accordance with AWWA C504, Section 5.2.*

**502.6.5.4.8.COD: PERFORMANCE TESTS:** *Each valve with the actuator mounted directly on the valve shall be shop operated by the valve manufacturer three times from the fully closed to the fully opened position and the reverse under a no-flow condition, to demonstrate that the complete assembly is workable.*

**502.6.5.4.9.COD: LEAKAGE TESTS:** *Each valve shall be shop tested for leaks with the valve in the closed position by the valve manufacturer. The test shall be conducted with the disc in a horizontal plane. With the disc in the closed position, air pressure at 150 psig shall be supplied to the lower face of the disc for the full test duration of no less than five (5) minutes. The upper surface of the valve disc shall be visible and shall be covered with a pool of water at 0-psig pressure. There shall be no indication of leakage past the valve disc (visible in the form of bubbles in the water pool on top of the disc) during the test period. All valves shall be leak-tight in both directions.*

**502.6.5.4.10.COD: HYDROSTATIC TESTS:** *The manufacturer shall subject all valve bodies to an internal hydrostatic pressure equivalent to two times the rated pressure of the valve. During the hydrostatic test, there shall be no leakage through the metal, the end joints, or the shaft seal, nor shall any part of the valve be permanently deformed. The time duration of this hydrostatic test shall be sufficient to allow visual examination for leakage and shall be at least 3 minutes for valves 10 inch through 20 inch, and 10 minutes for valves 24 inch and larger.*

**502.6.5.11.COD: METALLURGICAL TESTING:**

- (1) **Independent Testing:** *Subsequent to meeting all of the other requirements of this specification but prior to acceptance of the valve, the valve manufacturer may be required to furnish metallurgical analyses conducted by a qualified independent testing laboratory for verification of material compliance with all applicable ASTM designations.*

- (2) **Data Required:** *The specific analyses required shall be determined by the City of Dallas on a case-by-case basis.*

**502.6.5.4.12.COD: VERIFICATION OF COMPLIANCE WITH SPECIFICATIONS:**

- (1) **Documentation:** *Prior to any manufacturer’s butterfly valve being approved for use by the City of Dallas, the valve manufacturer shall deliver to the Dallas Water Utilities Department Distribution Division Material Engineer at 4120 Scottsdale Drive, Dallas, Texas 75227 a formal statement which either:*
  - (a) **Compliance:** *Verifies and affirms the compliance of that manufacturer’s butterfly valve with all the provisions of this Specification; OR*
  - (b) **Non-Compliance:** *Specifically identifies each section of this Specification which is not met by that manufacturer’s butterfly valve, and gives sufficient detailed information regarding the nature of each non-compliance to allow the City of Dallas to determine if the non-compliance is minor and can be waived, or if it is major and shall be considered a cause for rejection.*

**502.6.6.COD: LINE VALVE INSTALLATION:**

At locations shown on the plans, CONTRACTOR shall furnish and install valves of the type and size indicated. Valve vaults shall be furnished as provided in the special contract documents and constructed in accordance with **Item 702.4.8.8. Vaults** and applicable *Dallas Water Utility Standard Drawings for Water and Wastewater Construction*.

*All valve stacks will be of cast iron pipe (grey or ductile iron) and of one continuous piece to the finished grade. On advance of paving contracts, the valve stack may be extended to the final paving grade with one cast iron pipe extension. The two valve stack pipes must be aligned so that the valve can be operated properly. The extension must be connected to the existing valve stack with a bell and rubber gasket.*

**502.6.6.1.COD: GATE VALVES:** Valves shall be carefully handled and lowered into position in such a manner as to prevent damage to any part of the valve. The valve shall be placed in the proper position and held securely until all connections have been made. Where valves are to be placed in a concrete structure, the floor shall be completed before installing the valve. The valve shall be securely blocked so that its weight is carried by the floor rather than being supported by connected piping. *Dallas Water Utility Standard Drawings for Water and Wastewater Construction*.

**502.6.6.2.COD: AIR RELEASE VALVES:** The term “air release valve” as used in this section shall apply to the installation of both air release valve and combination air and vacuum release valves. Vaults shall be furnished as an integral part of either air release valve or combination air and vacuum release valve installation.

Air valves shall be installed in the manner shown in *Dallas Water Utility Standard Drawings for Water and Wastewater Construction* and on the appurtenance sheet unless otherwise indicated on the plans. The proper valve and fitting sizes shall be installed on mains in accordance with the schedule in **Table 502.6.6.2.(a) Air Release Valve Sizing** unless otherwise specified.

**Table 502.6.6.2.(a) Air Release Valve Sizing**

I.D. OF MAIN		Size of Valve and Fitting	
Inches	Centimeter equivalent	Inches	Centimeter equivalent
16 and smaller	41 and smaller	1	2.5
18 through 36	46 through 91	2	5.1
42 and larger	107 and larger	3	7.6

Matching taps shall be provided for and made in accordance with **Item 502.10. Connections to Conduit for Service (with Addendum Items)**. Fittings required for mounting air valves shall be as specified in **Item 502.5. Fittings (with Addendum Items)**. All fittings shall be tight, leak free and plumbed true to the required position.

**502.6.7.COD: REJECTION:** Any valve may be rejected for failure to meet its respective requirements of this specification or referenced specifications.

**502.6.8.COD: MEASUREMENT AND PAYMENT:** Where valves are furnished by the OWNER, the valves shall be measured for payment for handling, placing, installing, jointing, testing, and all incidentals per each, grouped by size. Where the valves are to be furnished by the CONTRACTOR, the valves shall be measured for payment for furnishing, hauling, handling, placing, installing, jointing, testing, and all incidentals per each, grouped by size. The

price bid for valves shall include vault, roadway box, cover, extension pipe and pad supports since separate pay items shall not be set up for these items. Manholes for valve gearboxes shall be paid for at the contract unit price per each, grouped by sizes, complete in place, if provided in the proposal and contract. The contract unit price shall be the total compensation for labor, materials, tools, equipment, and incidentals necessary to install valves complete in place in strict accordance with drawings, specifications, and/or instructions of the OWNER.

(Page 502-20. Replace **Item 502.10.1. Definitions**, with the following: (A new sentence has been added to the end of this item.))

**502.10.1.COD: DEFINITIONS:** "Service" shall be defined as a service line to an individual customer. "Bullheads" shall be defined as an individual service line with branches at the end to serve two or more customers.

*Bullheads and services 1" and smaller in diameter and up to fifty (50) feet in length shall be installed with one continuous piece of copper tubing with no splices, coupling, etc.*

(Page 502-20. Add the following:)

**502.10.1.1.COD: NSF 61 COMPLIANCE:** *All service clamps must have received verifiable Certification of Compliance with the NSF 61 Standard.*

(Page 502-22. Replace **Item 502.10.3.1.1. Taps**, with the following: (A new final sentence has been added.))

**502.10.3.1.1.COD: TAPS:** Taps for transmission of water or air from the main into system service accessories can be either of two types as follows:

- (1) Standard internal pipe threaded holes in wall of water mains. These taps may be either manufactured into the pipe or installed in the field.
- (2) Tap installations that are made by clamping a service saddle equipped with a sealed threaded port on the periphery of the main and then drilling through the pipe wall to complete each service port. Taps may be made either on an uncharged system or into a main under pressure. *Single strap clamps will not be permitted on any type pipe.*

(Page 502-22. Replace **Item 502.10.3.1.2. Tap Assemblies**, with the following: (A new sentence has been added at the end of the first paragraph and a new sentence has been added at the end of the fourth paragraph.))

**502.10.3.1.2.COD: TAP ASSEMBLIES:** The tap assembly shall consist of a corporation stop and an iron to copper connection attached to a hard copper (Type K) tubing terminating approximately 1-ft. (30cm) below ground surface with a brass gate valve as shown and detailed on the plans to serve as additional air release. *Only soft copper (Type K) tubing will be allowed and a curb stop will be required in lieu of a brass gate valve.*

When tap assemblies are an integral part of an air valve installation, measurement, and payment shall be in accordance with **Item 502.6. Valves (with Addendum Items)**.

Tap assemblies may be required by the project plans and specifications adjacent to gate valve installations. Tap assemblies so required shall be installed in the water main on either side of the valve. Payment for the tap assemblies shall be included in the unit price bid for furnishing and installing the gate valve complete in place.

When taps are required for flushing, chlorination, and/or testing, the CONTRACTOR shall locate the taps in accordance with Dallas Water Utilities Standard Drawing 207 or other detail drawings, plans or in locations directed by the OWNER. *Unless otherwise specified in the CONTRACT, no separate payment shall be made for taps required for testing, flushing, and/or chlorination.*

Upon completion of the testing and purification, the CONTRACTOR shall return to the job site, remove the blow-off down to the corporation stop, backfill leaving the corporation stop in place, and replace all pavement. The CONTRACTOR'S removal of the blow-off shall include all labor, materials, tools, equipment, and incidentals necessary to complete the work, including excavation, backfill, and disposal of surplus materials without additional compensation.

(Page 502-22. Replace **Item 502.10.3.1.4. Tapping Ductile Iron Pipe**, with the following: (A new paragraph has been added at the end of this section.))

**502.10.3.1.4.COD: TAPPING DUCTILE IRON PIPE:** Service taps, unless otherwise specified, shall be made in cast iron pipe by direct tapping of the pipe wall (without use of tap saddles) for tap sizes relative to pipe diameters as shown in Table 502.10.3.1.4.(a) Tapping Ductile Iron Pipe.

**Table 502.10.3.1.4.(a).COD: Tapping Ductile Iron Pipe**

Tap Diameter	Pipe Diameter
¾-in. and 1-in.	4-in. through less than 12-in.
1½-in. and 2-in.	12-in. and larger

When direct tapping of cast iron pipe cannot be made within the limits as provided above, taps shall be made as set forth in this specification, utilizing service saddles.

*The respective Tap and Pipe Diameters given in this subsection are valid only for grey or ductile iron pipe with a wall thickness equal to Class 52 pipe, or thicker. If pipe with a wall thickness less than that of Class 52 pipe is encountered, direct taps will only be permitted in the ¾" and 1" sizes. Larger diameter taps shall require the use of a tapping saddle.*

(Page 502-22. Replace **Item 502.10.3.1.5. Tapping Concrete Pipe**, with the following: (A new sentence has been added to the end of this section.))

**502.10.3.1.5.COD: TAPPING CONCRETE PIPE:** Tap location shall be provided to the pipe manufacturer, when available, and taps shall be made by the manufacturer during the fabrication phase of the pipe when locations are so furnished. Taps fabricated during manufacture with a diameter less than or equal to 2-in. (5cm) shall be provided with brass or bronze insert bushings. Taps greater than 2-in. (5cm) shall be provided as flanged outlets with flange to thread insulator adapter kits. When taps are required to be made in the field, the taps shall be made in accordance with the pipe manufacturer's recommended procedures and to the satisfaction of the OWNER. *Flanged outlets will be required for taps greater than 2 inches.*

(Page 502-22. Replace **Item 502.10.3.1.7. Tapping PVC Pipe**, with the following:)

**502.10.3.1.7.COD: TAPPING OF PVC PIPE:** *All taps shall be made utilizing bronze service clamps.*

(Page 502-23. Replace **Item 502.10.3.2.1. Procedures for Transferring Service**, with the following:)

**502.10.3.2.1.COD: PROCEDURES FOR TRANSFERRING SERVICE:**

**502.10.3.2.1.1.COD: IN ADVANCE OF PAVING:**

- (1) A Public Relations letter will be furnished to each customer by the City prior to construction explaining the work to be done.
- (2) A new meter box will be located at the proposed ultimate grade and location. If a sidewalk is proposed, the meterbox will be set so that it will ultimately be in the center of the proposed sidewalk. If the top of the new meter box's ultimate elevation is higher than the existing ground, the new meter box will be set flush with the top of the existing ground. This meter box will be raised by others during the paving operations. If the top of the new meter box ultimate elevation is lower than the existing ground, the new meter box will be set at the ultimate elevation. The meter box lid, however, will not be installed in this meter box. Additional meter boxes will be stacked on top of the new meter box until the top box is higher than the existing ground elevation. The top meter box will have a meter box lid and the meter will be placed in the bottom meter box.
- (3) A new water service will be run from the new main to the new meter box. A new service line will be run from the new meter box to the property line and immediately adjacent to the existing house line. The service line will be turned up at this point and extended at least one foot above the existing ground. A C. F. curb stop will be installed on the end of the service line. This new service line will be connected to the existing house line when the water service is transferred. All new water service lines will be installed to clear all existing and proposed utilities and paving.
- (4) The new water service will be temporarily connected to the service line for flushing operations.
- (5) All new services will be flushed according to **Item 506.7. Purging and Disinfection of Water Conduits (with Addendum Items)**, The main will then be hydrostatically tested and chlorinated. After a good sample

is received, the Inspection Division will release the main to the Distribution Division to place in service. The Distribution Division will inform the Inspection Division when the new services are ready to be transferred. The CONTRACTOR is then instructed by the Inspector that he may begin transferring the service.

- (6) The Inspector must be present at all times during the transfer of the services.
- (7) Each customer is informed about the transfer by the Inspector. The customer will be given a tag explaining the work to be done and the City emergency phone number.
- (8) Services will be transferred, in order, on one side of the block at a time.
- (9) It is very important that the CONTRACTOR does not allow any contaminated water or material to enter the system.
- (10) The water serving the house through the existing water service will be stopped by closing a corp or curb stop on the existing water service. The existing house line and new service line will then be cut at the property line and connected. Galvanized house lines will not be threaded for connection, but will be cut and connected with a coupling.
- (11) The existing meter will be removed and installed in the new meter box. In every case, all meter gaskets and bolts will be replaced. The new water service and service line will be placed so that when the meter is installed, the lines will not be in tension.
- (12) If a meter stops or appears to be damaged, the Meters Division (214) 651-1441 shall be informed by the Inspector. They will bring a new meter to the job site for the CONTRACTOR to install. The CONTRACTOR will be permitted to install a jumper section to provide service if there is a delay in obtaining the new meter.  
  
When the new meter is received, the jumper will be removed and the new meter installed by the CONTRACTOR. There shall be no additional cost to the OWNER for this work.
- (13) Customer is at home during transfer: The CONTRACTOR will inform the customer that the service is being transferred. Before turning on the water at the meter, an outside faucet or cold-water bathtub faucet shall be opened so air and sediment can be released from the plumbing. The water is to be turned on slowly and all connections inspected for leaks. The CONTRACTOR shall repair all leaks. The CONTRACTOR is to check with each customer to insure proper water service after the transfer.
- (14) Customer is not at home during transfer: If an outside faucet is available, it will be opened so air and sediment can be released from the plumbing. If an outside faucet is not available, the transfer will still be made. After the water is turned on and it runs for more than 10 gallons for a 3/4" or 1" service and more than 30 gallons for 1 1/2" or 2" service, the water will be cut off and a tag of explanation left on the customer's door. The tag will give a City telephone number to call to have service restored after the customer returns home.
- (15) *The CONTRACTOR is responsible for all damages. If the house line or plumbing is damaged or clogged, the CONTRACTOR will make the necessary repairs, if possible. If the CONTRACTOR cannot make the repairs, he will hire a plumber to do the work. The customer may, at his option, hire his own plumber to do the work and the CONTRACTOR will be responsible to reimburse the customer for this expense. The CONTRACTOR will not be allowed to leave the work site until released by the Inspector. The Inspector will not permit the CONTRACTOR to leave the work site if a customer is without water service. If a problem surfaces after the CONTRACTOR has left the job site, the customer will be instructed to call the City of Dallas Action Center by dialing 311, within the City Limits of the City of Dallas or (214) 670-5111 from any other location.*
- (16) When service is restored through the new main and services, the old meter box and the line from the old meter box to the property line will be removed and become the property of the CONTRACTOR.

**502.10.3.2.1.2.COD: AFTER PAVING:**

- (1) A Public Relations letter will be furnished each customer by the City prior to construction explaining the work to be done.
- (2) All new services will be flushed according to **Item 506.7.Purging and Disinfection of Water Conduits (with Addendum Items)**. The main will then be hydrostatically tested and chlorinated. After a good sample is received, the Inspection Division will release the main to the Distribution Division to place in service. The Distribution Division will inform the Inspection Division when the new services are ready to be transferred. The CONTRACTOR is then instructed by the Inspector that he may begin transferring the services.
- (3) The Inspector must be present at all times during the transfer of the services.
- (4) Each customer is informed about the transfer by the Inspector. The customer will be given a tag explaining the work to be done and the City emergency phone number.
- (5) Services will be transferred in order on one side of the block at a time.

- (6) It is very important that the CONTRACTOR does not allow any contaminated water or material to enter the system. The meter box will be removed and the area excavated a minimum of 12 inches below where the meter will be set. All water from any source will be removed from the excavated area prior to disconnecting any portion of the existing system. The excavation must be kept dry if possible. In cases where it is not possible to keep the excavation dry, the water will never be allowed to reach a level any higher than six (6) inches below the meter. A piece of copper tubing is attached to the new service for flushing purposes. The service is to be flushed away from the excavation until good, clear water is evident.

**IN ALL CASES, THE SERVICE WILL BE FLUSHED A MINIMUM OF ONE (1) MINUTE.** Before any reconnections are made, all fittings and openings will be clear and sanitary. A plug will be installed on the house line after it is removed to prevent contaminated material or water from entering the system.

- (7) The CONTRACTOR is to remove the existing meter box. The meter will be removed only if it needs to be relocated to a new grade. The service is to be installed according to the "COD Standard Details for Water and Wastewater Construction", Latest Version. In every case, all meter gaskets and bolts will be replaced. The meter and house service is to be adjusted to the proper grade as shown. Extreme care must be used when working on the house line to insure that it is not damaged. The house line and new service will be properly lined so that when the meter is reinstalled, the lines will not be in tension. Galvanized house lines will not be threaded for connection, but will be cut and connected with a coupling.
- (8) Customer is at home during transfer: Before turning on the water at the meter, an outside facet or cold-water bathtub faucet is to be opened so air and sediment can be released from the plumbing. The water is to be turned on slowly and all connections inspected for leaks. The CONTRACTOR will stop all leaks. Check with each customer or turn on an outside faucet to insure proper water service after the transfer.
- (9) Customer is not home during transfer: If an outside faucet is available, it will be opened so air and sediment can be released from the plumbing. If an outside faucet is not available, the transfer will still be made. After the water is turned on and it continues to run more than 10 gallons for a 3/4" and 1" service or more than 30 gallons for 1 1/2" and 2" service, the water will be cut off and a tag of explanation left on the customer's door. The tag will give a City telephone number to call to have service restored after the customer returns home.
- (10) The CONTRACTOR is responsible for all damages. If the house line or plumbing is damaged or clogged, the CONTRACTOR will make the necessary repairs, if possible. If the CONTRACTOR cannot make the repairs, he will hire a plumber to do the work. The customer may, at his option, hire his own plumber to do the work and the CONTRACTOR will be responsible to reimburse the customer for this expense. The CONTRACTOR will not be allowed to leave the work site until released by the Inspector. The Inspector will not permit the CONTRACTOR to leave the work site if a customer is without water service. If a problem surfaces after the CONTRACTOR has left the job site, the customer will be instructed to call the City emergency service at 670-5700.
- (11) If a meter stops, the meter Division (214) 651-1441 shall be informed by the Inspector. They will bring a new meter to the job site for the CONTRACTOR to install. The CONTRACTOR will be permitted to install a jumper section to provide service if there is a delay in obtaining the new meter. When the new meter is received, the jumper will be removed and the new meter installed by the CONTRACTOR. There shall be no additional cost to the OWNER for this work.
- (12) When service is restored, the meter box is to be set at the proper grade. All existing concrete or metallic boxes deemed unsuitable by the Inspector are to be replaced with new approved corrugated meter boxes approved for use by the City. The excavated material will be used to backfill under and around the meter box. The material will be properly compacted to prevent settlement. Sand will only be used to grade the meter box. Sod will be replaced around the box or if the meter box was set in a concrete walk or drive, concrete will be used.

(Page 501-11. Add the following:)

**502.10.3.3.COD: NSF 61 COMPLIANCE:** All copper tubing must have received verifiable Certification of Compliance with the NSF 61 Standard.

(Page 502-24. Replace **Item 502.10.4.1. Service Connection**, with the following: (A new sentence has been added at the end of this item))

**502.10.4.1.COD: SERVICE CONNECTION:** Service pipe shall be of the same pipe material as the main wastewater conduit unless otherwise specified on the plans or in the contract or approved by the OWNER. Connections shall be made to prevent the occurrence of bi-metallic corrosion or any other corrosion that can result by joining incompatible materials.

Wastewater service connections shall be defined as a service line connecting the customer's wastewater system at the property line or utility easement to the main wastewater conduit and shall consist of the service combination tee wye, the necessary Class B or Class PB (as specified by the OWNER) concrete cradle or crushed stone for the tee

wye, the service pipe necessary to extend the line from the main wastewater conduit to the customer's property line and a plug placed in the end of the service line.

Services for single-family residence shall normally be 4-inches (10cm) in diameter. Standard 4-inch (10cm) laterals shall consist of a standard wye and bend and the necessary pipe and cleanout as shown on the plans or directed by the OWNER. Larger laterals shall consist of a manhole and the necessary minimum 6-inch (15cm) pipe as shown on the plans or directed by the OWNER. If the CONTRACTOR is required to connect or reconnect the service line to the customer's wastewater system, the connection shall be as shown on the plans. If the CONTRACTOR is not required to connect to the customer's wastewater system, the service line shall be plugged and sealed.

Extra depth service connections shall be installed when the wastewater main is at a depth greater than that necessary to serve the abutting property. The service is identical to a standard connection except that pipe risers will be installed at a maximum 45-degree angle into the trench walls to connect the combination tee wye and 45-degree bend to the service pipe. Where possible, a minimum slope of ¼-in.-per-foot (equivalent to a 2% slope) will be maintained. Where the wastewater main is located in the street and the abutting property slopes to the street, the wastewater service shall normally have a minimum depth of 5-feet below the top of the curb at the point where it passes beneath the curb. Where abutting property slopes away from the wastewater main, service connections shall be placed at a depth adequate to serve the normally expected use of the property.

Where water and wastewater service connections cross, they shall be treated in accordance with TCEQ regulations.

*All new laterals for vacant lots shall be placed at the Lot Corner with the lowest wastewater main line elevation, as directed by the OWNER.*

## ITEM 503.COD: TRENCHLESS INSTALLATION

(Page 503-1. Replace **Item 503.3.2. Materials**, with the following:)

**503.3.2.COD MATERIALS:** *The encasement and carrier pipe shall be of the type and strength as indicated on the plans. All necessary materials shall conform to the applicable sections of these specifications or as specified by the OWNER. If none is specified on the plan, the CONTRACTOR shall submit an encasement design to the OWNER for approval.*

(Page 503-1. Replace **Item 503.3.3.1. General**, with the following: (A new paragraph has been added at the end of this item.))

### **503.3.3.COD: CONSTRUCTION METHODS:**

**503.3.3.1.COD: GENERAL:** The CONTRACTOR may request to perform the work by jacking, boring, or tunneling in lieu of open cut.

Where encasement or carrier pipe is required to be installed under railroad embankments or under highways, streets or other facilities by jacking, boring or tunneling methods, construction shall be made in a manner that shall not interfere with the operation of the railroad, highway or other facility and shall not weaken or damage any embankment or structure. The CONTRACTOR shall notify all railroad companies or TxDOT at least 48-hours prior to construction. The CONTRACTOR shall provide insurance as required by the governing authority.

During construction operations, barricades and lights to safeguard traffic and pedestrians shall be furnished and maintained around the excavation, equipment, and materials as required in **Item 107.19. Protection of Work and of Persons and Property (with Addendum Items)**, until such time as the backfill has been completed and then shall be removed from the site. All excavations shall be safely secured at all times to prevent unauthorized access to the excavation site.

The CONTRACTOR shall take the proper precautions to avoid excavating earth or rock or shattering rock beyond the limits of excavation needed to install the conduit. All damages caused by excavating or blasting, either to surface or subsurface structures, shall be repaired or replaced by the CONTRACTOR at the CONTRACTOR'S own cost and expense. The CONTRACTOR shall dispose of all surplus materials at its own expense.

The drilling of pilot holes for the alignment of pipe prior to its installation by jacking, boring, or tunneling shall not be a requirement but may be necessary to maintain grade.

*In cases where grout is to be used to fill the void between the carrier pipe and encasement, or the carrier pipe and rock/earth (if an encasement is not required), the CONTRACTOR may submit a request to use injected pea gravel in lieu of grout. Requests will be reviewed by the OWNER on a case-by-case basis. If the request is not granted, the refusal will not constitute the basis for a claim. If the request is granted, a submittal detailing the means and methods of performing the work will be required for approval by the OWNER. The OWNER will have the option to require the use of grout and reject the entire concept of using injected pea gravel if the submittal is not approved. If the submittal is approved, it will not constitute a basis for an increase or a decrease to the cost of the CONTRACT. If the submittal is approved, the City accepts no responsibility for the final construction results by using pea gravel in lieu of grout.*

*(blank)*

## ITEM 504.COD: OPEN CUT – BACKFILL

(Page 504-3. Replace **Item 504.2.3.5. Modified Flowable Backfill**, with the following: (A new paragraph has been added at the end.))

**504.2.3.5.COD: MODIFIED FLOWABLE BACKFILL:** Modified flowable backfill in areas of possible future excavation such as utility installations shall consist of a mixture of native soils or manufactured materials, cement and/or fly ash, air-entraining material, and water which produces a material with unconfined compressive strength of between 50-psi and 150-psi (4- to 11-kg/cm<sup>2</sup>) after 28-days. Modified flowable backfill in permanent areas such as abandoned pipe closures, abutments and embankments shall contain similar materials and shall have an unconfined compressive strength of greater than 150-psi (11-kg/cm<sup>2</sup>) after 28 days. Any materials used shall be primarily granular, with a plasticity index <12 and with 100% passing a ¾-in. sieve. The flowable mixture shall be mixed in a pug mill, concrete mixer, or transit mixer and shall have a minimum slump of 5-in (13cm). The flowable mixture must be allowed to set prior to the placement of any overlying material.

*The CONTRACTOR shall backfill around and a minimum of 12" above the top of pipe with Modified Flowable Backfill. The CONTRACTOR shall restore all disturbed areas to pre-construction condition (or better). All restoration including, but not limited to, fence replacement, grass sodding, shrub and flower replacement shall be incidental to appropriate Bid Item Numbers.*

(Page 504-4. Add the following:)

**504.2.3.6.COD: OPEN CUT WASTEWATER LATERAL AND WATER SERVICES:** *All open cut Wastewater Laterals and Water Services shall be backfilled with flowable backfill per Public Works and Transportation's Pavement Cut and Repair Standards Manual from the embedment zone to a level consistent with the paving sub-grade and the backfill will be placed up to the water meter cans and wastewater clean-outs, when the Wastewater Laterals or the Water Services are placed under existing or proposed areas to be paved. Wastewater Laterals and Water Services placed in crushed rock alleys are exempt from this requirement. This requirement shall be considered inclusive to the Bid Items and shall not be considered for extra payment.*

(Page 504-5. Replace **Item 504.4.2.1. Water for Construction**, with the following:)

**504.4.2.1.COD: WATER FOR CONSTRUCTION:** *All water for construction of water or sanitary sewer mains shall be furnished by the OWNER free from the nearest convenient City of Dallas main. If water from the OWNER is unavailable, CONTRACTOR shall be responsible for purchasing water from a local SUPPLIER or another city.*

(Page 504-5. Replace Item 504.4.3. Sequence, with the following: (A New paragraph has been added at the end of this section.))

**504.4.3.COD: SEQUENCE:** The sequence of operations to be followed shall be prepared by the CONTRACTOR for approval by the OWNER. The sequence shall meet the job requirements for completion time, avoid interference with plant operations, and conform to plan and specification requirements. The construction of all storm drain and wastewater collection systems shall begin at the outlet or lower end, unless otherwise directed by the OWNER. Tributary lines for storm drain and wastewater collection systems shall not be started until the main line has been built to their junction points.

*A construction schedule shall be prepared by the CONTRACTOR and submitted to the OWNER prior to construction or within ten days of the notice to proceed, whichever occurs first. The CONTRACTOR shall call the appropriate Construction Superintendent, a minimum of 10 working days in advance of construction to request an inspector.*

(Page 504-5. Replace **Item 504.4.4. Layout**, with the following: (A new sentence has been added at the end of this section.))

**504.4.4.COD: LAYOUT:** The CONTRACTOR shall construct the work in the locations and to the grades and elevations shown on the plans from base lines and benchmarks as established by the OWNER. *Cut sheets prepared by anyone other than the OWNER must be approved by the OWNER's inspection division before any work will be allowed using that data.*

(Page 504-6. Replace **Item 504.5.1.1. Terms**, with the following:)

**504.5.1.1.COD: TERMS:**

- D — inside diameter of the pipe.
- OD — outside diameter of the pipe.
- B<sub>c</sub> — outside diameter of the pipe.
- B<sub>d</sub> — Trench width.

Stone cuttings are rock trench excavated material. The maximum allowable dimension of the stone to be used for embedment is 1-in. (2.5cm). Rock cuttings may only be used as Class D+ embedment for water conduits.

Densities shall be shown as a percent of the maximum dry density at not less than 2% below optimum moisture of samples of the material as determined by the ASTM D698 Maximum Density Optimum Moisture Test.

(Page 504-6. Delete **Item 504.5.1.3. Trench Dimensions**, and replace with Latest DWU Standard Drawings For Water and Wastewater Construction, sheet 113 through 119.)

**504.5.1.3.COD: TRENCH DIMENSIONS:** *Refer to latest DWU Standard Drawings for Water and Wastewater Construction, sheet 112 through 119 for information concerning allowable trench width.*

(Page 504-9. Replace **Item 504.5.3.2. Compaction**, with the following: (New paragraphs have been added to the end of this section))

**504.5.3.2.COD: COMPACTION:** Compaction of all backfill material shall be performed in a manner that shall not crack, crush, and/or cause the installed pipe to be moved from the established grade and/or alignment, as shown on the plans. Satisfactory density shall be obtained at various depths on all backfill material as indicated from random selected test points prior to the required exfiltration or pressure tests that are to be performed on lines being constructed. The required moisture content shall be at not less than 2% below nor more than 4% above the optimum moisture of the material or as specified by the OWNER. In-place density/moisture content shall be tested and verified as specified by the OWNER, or at an average frequency of once per 100-linear-feet (30m) per 1-foot (0.3m) of compacted depth.

- (1) *Densities shall be taken at the amount of three (3) per one hundred (100) feet of open cut trench excavation, equally spaced. The density tests are to be conducted by the OWNER'S approved Soil Density Lab. The depths of the samples and the approximate locations are to be coordinated and approved by the OWNER.*
- (2) *All densities shall meet the requirements set forth in the Pavement Cut and Repair Standards Manual, amended, issued by the Department of Public Works and Transportation.*

(Page 504-9. Replace **Item 504.5.3.2.1. Densities - Areas Subjected to or Influenced by Vehicular Traffic** and **Item 504.5.3.2.2. Densities - Areas Not Subjected to or Influenced by Vehicular Traffic**, with the following: (The ends of the paragraphs have been replaced with new sentences.))

**504.5.3.2.1.COD: DENSITIES - AREAS SUBJECTED TO OR INFLUENCED BY VEHICULAR TRAFFIC:** The trench backfill shall be mechanically compacted to the top of the subgrade in 6-in. (15cm) loose lifts to at least 95-percent of maximum density as determined by ASTM D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)). *In lieu of mechanically tamped material, the CONTRACTOR may, at no expense to the OWNER, furnish and place sand. At the time of placement, the sand should have moisture content between 5 and 8%. The density requirements are to be met for this sand backfill regardless of the method to be used for compaction.*

**504.5.3.2.2.COD: DENSITIES — AREAS NOT SUBJECTED TO OR INFLUENCED BY VEHICULAR TRAFFIC:** The trench backfill shall be placed in layers not more than 10-in. (25cm) loose depth and shall be compacted by mechanical means, subject to the restrictions outlined in **Item 504.5.3.2.5.COD. Compaction Methods**, to at least 90-percent of maximum density as determined by ASTM D698. *In lieu of mechanically tamped material, the CONTRACTOR may, at no expense to the OWNER, furnish and place sand. At the time of placement, the sand should have moisture content between 5 and 8%. The density requirements are to be met for this sand backfill regardless of the method to be used for compaction.*

(Page 504-10. Replace **Item 504.5.3.2.5. Compaction Methods**, with the following: (The last paragraph has been added.))

**504.5.3.2.5.COD: COMPACTION METHODS:** The method of compaction shall be left to the discretion of the CONTRACTOR with the following exception, unless otherwise specified, provided the degree of compaction is obtained and provided that the pipe is not damaged in the process. If any potential damage to the pipe due to a method of compaction exists, in the opinion of the OWNER, that method of compaction shall not be allowed.

Compaction of any backfill material by flooding or jetting shall not be permitted.

Hand-operated mechanical tampers may be used with approval of the OWNER for compacting backfill.

*Vibratory rollers will not be permitted unless approved by the OWNER*

(Page 504-10. Replace **Item 504.5.3.3.Rejection**, with the following: (A new sentence has been added to the end of this item.))

**504.5.3.3.COD: REJECTION:** If the results of tests made by the OWNER'S designated testing laboratory indicate the backfill does not meet the specified density and/or moisture requirements throughout its depth, the OWNER shall require its removal and replacement to meet the requirements. Re-testing will be performed by the OWNER'S designated testing laboratory at the OWNER'S expense. *All removal and replacement of backfill material will be at no cost to the OWNER*

(Page 504-10. Add the following:)

**504.6.8.COD: FOUR F FLOWABLE BACKFILL:** *Four F Flowable Backfill shall consist of an appropriate amount of cement (with other additives as necessary) mixed with mortar sand to flow and fill all voids in the excavation. This fill shall develop a compressive strength of 1120 pounds per square foot (7.8 psi) one hour after placement, and a 28-day compressive strength with the range of 25 to 100 psi. The material must be such that it can be capped in one and one-half to two hours.*

(Page 504-10. Add the following:)

**504.7.2.1.1.COD: NO EXTRA ALLOWANCES:** No extra allowance shall be made for backfill materials used around manholes, vault boxes, or other structural components. Trench backfill computations shall be carried through such structures. No allowance for waste shall be made.

(Page 504-11. Add the following:)

**504.7.3. COD: SURPLUS EXCAVATION:** *The CONTRACTOR shall submit a list of those disposal sites where surplus excavation and other materials removed, as part of the construction, are disposed of along with copies of permits or licenses for each facility. If the sites are not permitted or licensed then the CONTRACTOR must furnish a copy of a signed permission agreement with the Property OWNER(s). Conditions and restrictions, if any, shall be clearly stated. Compliance with these conditions and restrictions will be required, and a release from the Property OWNER(s) must be obtained upon completion of the project.*

*Surplus excavation and other materials must not be deposited in areas designated as Flood Plain or along natural drainage ways. Materials deposited will be removed at the CONTRACTOR'S expense and the area restored to its natural condition.*

*Failure to comply promptly with the requirements of this provision will result in denial of the OWNER's final approval and acceptance*

*(blank)*

## ITEM 505.COD: OPEN CUT – GENERAL CONDUIT INSTALLATION

(Page 505-1. Replace **Item 505.1.3. Street Cut Permit**, with the following:)

**505.1.3.COD: STREET CUT PERMIT:** *A Street Cut Permit is required to be in the CONTRACTOR'S possession on the job site prior to making a cut in City Right of Way. The permit will be obtained and furnished by the OWNER.*

(Page 505-1. Replace **Item 505.1.6. Laying Underground Conduit**, with the following: (The last three paragraphs have been added))

**505.1.6.COD: LAYING UNDERGROUND CONDUIT:** Prior to being lowered into the trench, each pipe shall be carefully inspected; those not meeting specifications shall be rejected and either destroyed or removed from the job. All lumps or excrescences on the ends of conduit shall be removed before it is lowered into the trench. No pipe shall be laid except in the presence of the OWNER, unless otherwise specified. The OWNER may order the removal of and the re-laying of any pipe that was not observed as it was placed. The pipe and specials shall be so laid in the trench that after the project is completed the interior surface shall conform accurately to the grade and alignment indicated on the plans. Bell holes shall be excavated and all pipes shall be carefully adjusted to fit snugly in cradling or bedding so that the entire length bears on cradling or bedding material with no wedging or blocking to hold up the bell. All water pipes shall be laid dry, regardless of the type of joint used.

Pipes shall be laid with the bell or groove end upgrade unless otherwise approved by the OWNER and, in any event, shall be laid with the bell or collar away from the last section placed. Pipe must be swabbed clean before placement in the ditch.

Before laying the pipe, the interior of the joints shall be carefully bored smooth and clean and the annular space shall be kept free from dirt, stones, or water. Pipe shall be installed and joints made up in complete conformance with the instructions and recommendations regarding proper installation and assembly furnished by the manufacturer. Proper facilities shall be provided for hoisting and lowering the section of the pipe into the trench without disturbing the prepared foundation and the sides of the trench. All pipes shall be so laid that the contact in the joint between two lengths of pipe shall be uniform throughout the circumference of the joint. Where curves in the alignment are indicated on the drawings, standard pipe (short sections of pipe or bevels) shall be used with the outside edge of the joint pulled away from the seat to make a smooth curve.

When work is suspended on the line for any reason, the end of the line shall be properly closed with an effective watertight seal or plug manufactured for this purpose.

(Page 505-3. Add the following:)

**505.3.COD: DAMAGED PIPE:** *Pipe that is damaged during installation will be repaired only by a method approved by the OWNER. If, in the opinion of the OWNER, a satisfactory repair cannot be made by the method(s) suggested by the CONTRACTOR or pipe manufacturer, the damaged pipe shall be removed and replaced with sound pipe that meets the specifications of the CONTRACT. Repairs or replacement will be at no cost to the OWNER including costs associated with removing and replacing non-damaged pipe for the purpose of removing damaged pipe.*

*(blank)*

## ITEM 506.COD: OPEN CUT – WATER CONDUIT INSTALLATION

(Page 506-2. Replace **Item 506.5 Hydrostatic Test**, with the following: (There are several additions to the first paragraph of this section.)

### 506.5.COD: HYDROSTATIC TEST:

*Before being accepted, all ductile iron and plastic pipelines constructed shall be tested with a hydraulic test pressure of not less than 175-psi (1206.58-KPa), maintained over a period of not less than 2-hours unless otherwise specified by the OWNER, except that polyethylene pipe shall be tested as described below in **Item 506.5.1. Hydrostatic Testing Polyethylene Pipe**, unless otherwise specified by the OWNER. Alternately, a 2-hour test may be conducted on PVC in accordance with AWWA C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water and a 2-hour test may be conducted on ductile iron in accordance with AWWA C600 Installation of Ductile-Iron Water Mains and Their Appurtenances. Concrete pressure pipe shall be tested with a hydraulic test pressure of 120-percent of the design pressure. Steel pressure pipe shall be tested with a hydraulic test pressure not to exceed 150-percent and not less than 120-percent of the design working pressure. The rate of leakage of all pipe tested shall not exceed 11.65-gallons-per-inch of nominal diameter of pipe per mile (0.01-cu.-m.-per-cm. of nominal diameter per km.) over a 24-hour period. Water lines of materials in combination shall be tested for the type of pipe (material) with the least stringent hydraulic test pressure maintained over a period of not less than 4-hours. Acceptable test values are provided in **Table 506.5.(a).COD. Allowable Leakage for 4-Hours at Test Pressure of 150-psi.***

All newly laid pipe, or any valve section thereof, shall be subjected to the test with the gauge located at the lowest point in the system to be tested. If the line cannot be tested at its lowest point, a correction factor of minus 0.43 lb./vert. ft. (0.64 kg/vert. m) shall be made.

**Table 506.5.(a).COD. Allowable Leakage for 4-Hours at Test Pressure of 150-psi (Gallons)**

Length (Ft.)	Pipe Diameter (Inches)															
	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"	54"	60"	66"
5	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.10	0.11	0.12
10	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.22	0.24
15	0.03	0.04	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.17	0.20	0.23	0.26	0.30	0.33	0.36
20	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.18	0.22	0.26	0.31	0.35	0.40	0.44	0.49
25	0.06	0.07	0.09	0.11	0.13	0.15	0.17	0.18	0.22	0.28	0.33	0.39	0.44	0.50	0.55	0.61
50	0.11	0.15	0.18	0.22	0.26	0.29	0.33	0.37	0.44	0.55	0.66	0.77	0.88	0.99	1.10	1.21
75	0.17	0.22	0.28	0.33	0.39	0.44	0.50	0.55	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.82
100	0.22	0.29	0.37	0.44	0.51	0.59	0.66	0.74	0.88	1.10	1.32	1.54	1.77	1.99	2.21	2.43
200	0.44	0.59	0.74	0.88	1.03	1.18	1.32	1.47	1.77	2.21	2.65	3.09	3.53	3.97	4.41	4.85
300	0.66	0.88	1.10	1.32	1.54	1.77	1.99	2.21	2.65	3.31	3.97	4.63	5.30	5.96	6.62	7.28
400	0.88	1.18	1.47	1.77	2.06	2.35	2.65	2.94	3.53	4.41	5.30	6.18	7.06	7.94	8.83	9.71
500	1.10	1.47	1.84	2.21	2.57	2.94	3.31	3.68	4.41	5.52	6.62	7.72	8.83	9.93	11.03	12.14
600	1.32	1.77	2.21	2.65	3.09	3.53	3.97	4.41	5.30	6.62	7.94	9.27	10.59	11.92	13.24	14.56
700	1.54	2.06	2.57	3.09	3.60	4.12	4.63	5.15	6.18	7.72	9.27	10.81	12.36	13.90	15.45	16.99
800	1.77	2.35	2.94	3.53	4.12	4.71	5.30	5.88	7.06	8.83	10.59	12.36	14.12	15.89	17.65	19.42
900	1.99	2.65	3.31	3.97	4.63	5.30	5.96	6.62	7.94	9.93	11.92	13.90	15.89	17.87	19.86	21.85
1000	2.21	2.94	3.68	4.41	5.15	5.88	6.62	7.36	8.83	11.03	13.24	15.45	17.65	19.86	22.07	24.27
Valve	0.19	0.25	0.31	0.37	0.44	0.50	0.56	0.62	0.75	0.94	1.12	1.31	1.50	1.68	1.87	2.06

$$\text{ALLOWABLE LEAKAGE (GAL.) FOR 4 HOURS} = \frac{4 \times (S \times D \sqrt{P})}{133,200}$$

S = Length of Pipe, Ft.	Valve Leakage Allowable = 0.0078 Gal./Hour/In. of nominal valve size
D = Diameter of Pipe, In.	Test — Ductile Iron, Plastic, and at 150 psi
P = 150 psi	— Concrete 120% of Design Pressure
Height Correction = 0.43 psi/Ft.	— Steel 120% Min. to 150% Max. Design Working Pressure

If the tests indicate a leakage in excess of the above rate, then the CONTRACTOR shall be required to find and repair the leak. Even if the test requirements are met, all apparent leaks shall be stopped. Allowance for valve leakage to the atmosphere may be determined as no more than 0.0078-gal./hr./in. (0.012-L/hr./cm.) of nominal valve size. The OWNER cannot guarantee that an old existing system valve shall hold the required pressure. The CONTRACTOR has the option of plugging the new conduit prior to tying onto the existing system and testing against the old valve. If the old valve does not hold against the test pressure, then the CONTRACTOR must cut and plug the new conduit, hydrostatic test the new conduit, and then complete the tie-in. Internal test plugs may be used in larger reinforced concrete conduits in lieu of plugging prior to making a tie-in.

The cost of testing and repairing the leaks, including all uncovering, repairing, backfilling and incidental work, shall be at the expense of the CONTRACTOR.

(Page 506-3. Replace **Item 506.6. Connections to Existing Water Conduits**, with the following: (The second paragraph has been replaced.)

**506.6.COD: CONNECTIONS TO EXISTING WATER CONDUITS:**

Connection to an existing water conduit shall include not only branch connections but in-line connections for the purpose of making required pipe adjustments as well. Any connection or series of connections required to be performed on an existing water conduit shall meet with the OWNER'S specific approval as to the seasonal period when the work can be performed, the length of time required for the work to be completed, the work procedures proposed, and/or any other facet that could affect quality or quantity of water supply to the affected area. The work shall be performed with stringent built-in safeguards (such as adequate back-up equipment, labor and materials available) to insure that time schedules are met without failure and subsequent setback. Every effort shall be made to accomplish as much of the work as possible before actual tie-in is made into the existing conduit. This is especially applicable where vertical and horizontal concrete thrust blocks are a necessity to impose proper restraint of the pipe when the conduit is returned to full service. See *DWU Standard Drawings for Water and Wastewater Construction, sheets 229 to 235 for horizontal thrust blocks.*

*CONTRACTOR shall contact City of Dallas Inspections, a minimum of 48 hours in advance of a required valve shutdown.*

Where indicated on the plans and/or herein specified, the CONTRACTOR shall connect the new conduit to existing conduits. The CONTRACTOR shall furnish all labor, materials, equipment and services required for the locating and uncovering of the existing line; the making of cuts in the existing line; the removal, relocation, and/or lowering of existing lines as required (*See DWU Standard Drawings for Water and Wastewater Construction, sheet 225*); dewatering of the trench; connecting of the existing lines to the new conduit; and all appurtenant work required for complete connection. Appurtenant work shall follow the requirements stated herein and as specified in **Item 502. Appurtenances (with Addendum Items)**. Relocated conduits or lines shall be laid so that all valves shall be set vertically. The CONTRACTOR shall be required to plug and block lines, crosses, tees or other fittings installed in the new conduit to permit hydrostatic testing and chlorination prior to making connections. Such plugs and blocking shall be adequate to withstand an applicable test pressure.

Where cut-ins are made immediately adjacent to valves under pressure, the CONTRACTOR shall take all necessary precautions to brace such valves with temporary blocking. Bracing shall be of ample size and properly placed to prevent movement or blowing-off of any pipe, valves, or fittings due to water pressure on the conduit.

Connections to existing water conduits shall be made at the locations shown, as specified, and/or as directed by the OWNER. All such connections shall be made in a most expeditious and workmanlike manner to cause the least inconvenience to water customers and to traffic. The detailed schedule of operations for making each connection shall be approved by the OWNER before any work thereupon is commenced.

In the case where blow-off connections or fire hydrants are not provided for flushing, the CONTRACTOR shall be required to leave one end of the new conduit open for flushing and then plug and block the end for chlorination and testing.

There shall be no separate pay items for taps and blow-offs for hydrostatic testing and disinfection purposes. Taps and blow-offs for hydrostatic testing and disinfection purposes shall be installed by the CONTRACTOR, at locations specified by the OWNER. This may include placing a blow-off on an existing conduit at the tie-in, or addition of a blow-off(s) at an isolated existing valve, for facilitation of hydrostatic testing and/or chlorination. Compression type curb stops are not permitted for blow-offs

Upon completion of the hydrostatic testing and disinfection, the CONTRACTOR shall return to the job site and remove the blow-off down to the corporation stop. CONTRACTOR shall leave the corporation stop and backfill, replacing all pavement. Removal of the blow-off shall include all labor, materials, tools, equipment, and incidentals necessary to complete the work, including excavation, disposal of surplus materials, and backfill with no separate pay item.

(Page 506-4. Add the following:)

**506.6.1.COD: WATER MAIN TIE-IN DURING OFF HOURS:** *Tie-in connections affecting curtailment of quality or quantity of water to an area, businesses, etc., must be performed during the weekend or off-hours. All work must be coordinated through the OWNER or its representatives. Delay costs due to shut down and connection issues are considered incidental work and shall be borne by the CONTRACTOR. Refer to Item 502.10. Connections to Conduits for Service (with Addendum Items), and Item 506.6.COD Connections to Existing Water Conduits, for other general requirements. Unless otherwise stated in the CONTRACT, this item is a No Separate Pay Item.*

(Page 506-4. Add the following:)

**506.6.2.COD: SHUTDOWN OF WATER MAINS 20" DIAMETER AND LARGER:** *Construction that requires the shutdown of any water mains size 20" and larger shall only be done during the winter months between October 1 and May 1, unless otherwise approved by the OWNER. The schedule of these shutdowns must be coordinated with City of Dallas Distribution and City of Dallas Pumping Divisions and by the OWNER.*

(Page 506-4. Replace Item 506.7. Purging And Disinfection Of Water Conduits through Item 506.7.5.4. Sampling, with the following:)

**506.7.COD: DISPOSAL OF HEAVILY CHLORINATED WATER MAIN FLUSHING WATER:**

*The CONTRACTOR will install blowoffs at locations and sizes as shown on the Storm Water Pollution Prevention Plan (SWP3) or as directed by the OWNER.*

**506.7.1.COD: PRELIMINARY FLUSHING:** *Before being chlorinated, the main (s) shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/s unless the OWNER determines that conditions do not permit the required flow to be discharged to waste. Flushing is no substitute for preventive measures during construction.*

*Certain contaminates, such as caked deposits, resist flushing at any feasible velocity. In mains of 24 inch diameter and larger, an acceptable alternative to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.*

**Table 506.7.1.(a).COD: Required Flow and Openings to Flush Pipelines at 40 psi Pressure**

Pipe Diameter (inches)	Flow Required 2.5 ft/Sec (gpm)	Size of Tap			Number of 2 1/2" Hydrant Outlets Taps on Pipe
		1	1 1/2	2	
4"	100	1	-	-	1
6"	200	-	1	-	1
8"	400	-	2	1	1
10"	600	-	3	2	1
12"	900	-	-	2	2

**506.7.2.COD: CHLORINATION:** The OWNER shall chlorinate the main(s) in accordance with AWWA Standard C651a-90, Disinfecting Water Mains, as modified by the Dallas Water Utilities at no cost to the CONTRACTOR. The mains shall be chlorinated by one of two procedures; the Slug Method (usually used on large mains) or the Continuous-Feed Method.

- (1) Continuous-Feed Method. Chlorine shall be added near the source of an existing potable water main and will continue until the entire main is filled with heavily chlorinated water. The chlorinated water shall remain in the main(s) for a minimum of 24 hours.
- (2) Slug Method. A high concentration of chlorine is added to one point in the system (called a slug) and slowly moved through the system so that all parts of the system are exposed to the highly chlorinated water for a period of not less than 3 hours.

**506.7.3.COD: FLUSHING:** After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with the pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until the chlorine measurements show that the concentration in the water leaving the main is no higher than 4 mg/L. If the continuous-feed method is used, the main will be flushed a minimum of 24 hours.

(Page 506-5. Replace Item 506.7.3.2. Flushing Method, with the following;)

**506.7.3.2.COD: FLUSHING METHOD:** If the "flushing" method of purging is used, the CONTRACTOR shall be required to prepare the conduit by installing blow-offs at locations and sized as directed by the OWNER. This method shall also include the following:

- (1) In general, this shall consist of furnishing all equipment, material and labor to install blow-offs of sizes shown in **Table 506.7.3.2.(a).COD: Flushing Method Blow-Off Requirements.**

**Table 506.7.3.2.(a).COD: Flushing Method Blow-Off Requirements**

Size Conduit	Size Blow-Off
2-in. thru 8-in. (5cm – 20cm)	3/4-in. (1.9cm)
10-in. thru 12-in. (25cm – 30cm)	1 1/2-in. (3.8cm)
16-in. (40cm) and greater	2-in. (5cm)

- (2) After flushing is complete and satisfactory test results are received at the direction of the OWNER, the CONTRACTOR shall secure the conduit, remove the blow-off down to the corporation stop, backfill, and complete all appurtenant work to secure the system, or proceed with disinfection. The CONTRACTOR shall, in the securing of the conduit, remove the blow-off down to the corporation stop.

**506.7.3.3.COD: DISPOSAL OF FLUSHING WATER:** The CONTRACTOR shall be responsible to dispose of the water used to flush the heavily chlorinated water from the main. The CONTRACTOR may use one of four methods to dispose of the heavily chlorinated water. The method must be approved by the OWNER.

**NOTE:** The CONTRACTOR is not permitted to operate valves in the system. If valve operations are required during the flushing operation, this must be done by a representative of the OWNER.

- (1) A reducing agent shall be applied to the water to be wasted to neutralize the chlorine residual to a maximum of 4 mg/L. The water may then be discharged into the storm sewer or a waterway.
- (2) The water may be discharged into an existing wastewater system provided the OWNER'S Wastewater Collection Division has determined the existing system is capable of handling the additional flow at the planned point of input. A device must be used at the discharge point into the wastewater system that assures it is not possible to get backflow into the water system. As a minimum, there will be an 8-inch air gap from the end of the discharge hose to the wastewater system. The CONTRACTOR is responsible to furnish and install any hoses to connect to the blow-off, which are run to the wastewater system and proper barricades, warning devices, and/or flagmen to protect the public.
- (3) The water may be loaded into a tanker and transported to an existing wastewater system for discharge provided the OWNER'S Wastewater Collection Division has determined the existing system is capable of handling the additional flow at the planned point of input; or a reducing agent shall be applied to the water to be wasted to neutralize the chlorine residual to a maximum of 4 mg/L either in the tanker or a point offsite and the water discharged into the storm sewer or a waterway. Discharge into the wastewater system from a tanker will be gravity flow only and not pumped.
- (4) The water may be discharged into a catch basin provided the basin has a capacity to hold the entire discharge and will not overflow during a rain event. The water may then be discharged into a waterway or storm sewer from the catch basin once the chlorine residual is at or below 4 mg/L by either evaporation and/or dilution.

**506.7.5.4.COD: SAMPLING:** The CONTRACTOR shall remove the flushing hose(s) from the blowoff after flushing is complete. The OWNER will obtain a sample(s) from the blowoff(s) for bacteriological analysis. If the sample is acceptable, the system shall be placed in service by the OWNER. If the sample is not acceptable, the OWNER will direct the system be rechlorinated, flushed, or drained and cleaned on the inside, or a combination of any of these procedures. If the main is rechlorinated, the CONTRACTOR is responsible to dispose of the heavily chlorinated water as outlined above. Disposal of heavily chlorinated water due to rechlorination is not grounds for additional payment from the OWNER.

**506.7.6.COD: INDEMNIFICATION:** Notwithstanding any other provision in the CONTRACT documents, CONTRACTOR by execution of this CONTRACT acknowledges its responsibility for compliance with this section. CONTRACTOR covenants warrants and represents that it will receive, handle, process and dispose of chlorinated or otherwise contaminated water in total compliance with all regulations promulgated by the United States Environmental Protection Agency and the State of Texas. CONTRACTOR AGREES TO DEFEND, INDEMNIFY AND HOLD CITY, ITS OFFICERS, AGENTS AND EMPLOYEES FULLY HARMLESS AGAINST ANY AND ALL ACTIONS, ADMINISTRATIVE OR JUDICIAL, FOR CIVIL PENALTIES, FINES, AND ANY AND ALL SUITS FOR PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM FOR WHICH RECOVERY OF DAMAGES IS SOUGHT, SUFFERED BY ANY PERSON OR PERSONS, THAT MAY ARISE FROM OR BE OCCASIONED BY CONTRACTOR'S INTENTIONAL, WILLFUL OR NEGLIGENT VIOLATION OF A FEDERAL, STATE OR LOCAL ENVIRONMENTAL REGULATION, RULE OR ORDINANCE IN THE RECEIPT, HANDLING, PROCESSING OR DISPOSAL OF CHLORINATED OR OTHERWISE CONTAMINATED WATER REGARDLESS OF WHETHER CITY HAS BEEN NEGLIGENT OR AT FAULT IN THE TREATMENT OR HANDLING OF SUCH WATER PRIOR TO TRANSMISSION TO THE DISPOSAL FACILITY OR NEGLIGENT OR AT FAULT IN ITS ADMINISTRATION OF THIS CONTRACT. CONTRACTOR SHALL FULLY REIMBURSE CITY FOR ALL FINES, PENALTIES, DAMAGE SETTLEMENTS, OR JUDGMENTS INCURRED OR PAID BY CITY AS A RESULT OF THE CONTRACTOR'S INTENTIONAL, WILLFUL OR NEGLIGENT VIOLATIONS DESCRIBED ABOVE. The provisions of this indemnity are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

(Page 506-6. Add the following:)

**506.8.1.COD: CUT AND PLUGS:** Cut and plugs will only be paid when a contractor is required to excavate at a separate location outside of the on-going pipeline installation. All other cut and plugs (those that require plugs only) associated with the same excavation when connecting the new pipeline to an existing pipeline is considered incidental work and is **not a separate pay item**. Actual cut & plugs shall be paid under appropriate bid item numbers.

*(blank)*

## ITEM 507.COD: OPEN CUT – WASTEWATER CONDUIT INSTALLATION

(Page 507-2. Replace **Item 507.5.1.1. Infiltration Test**, with the following: (The last paragraph has been added)

**507.5.1.1.COD: INFILTRATION TEST:** The total seepage in infiltration of ground water, as determined by test, shall in no case exceed 50-gallons-per-inch of nominal diameter of pipe per mile (0.05-cubic-meters-per-centimeter of nominal diameter of pipe per kilometer) over a 24-hour period, and shall be the same regardless of piping material used. The allowable leakage of each manhole, or other structure, shall be as specified on the plans. An infiltration test or tests shall be made on all sections of the project where air testing could not be adequately performed or if ordered by the OWNER and on each manhole individually before placing the system in service and before any connections are made to other wastewater conduits. If the quantity of the effluent into the conduit or conduits is in excess of the maximum quantity as hereinbefore specified, the joints shall be repaired or the wastewater conduit relayed, if necessary, or other remedial construction shall be performed by and at the expense of the CONTRACTOR, in order to reduce the quantity of ground water infiltration to an amount within limits as specified.

The test shall be made by utilizing ground water, if any, or flooding a section at a time. Observation from jetting is not acceptable.

*It is the intent of the OWNER that no allowance shall be made for seepage of ground water at the time the test is performed (zero infiltration). The actual connection to the existing system will not be permitted without prior approval of the OWNER. It is the intent of the OWNER to complete the construction of new wastewater mains and test the system prior to any connection to the existing system. Exceptions may be made by the OWNER in the event an existing main is to be connected to the new main upstream of the outfall of the new main. A stopper may be used until a tie-in is approved by the OWNER.*

*(blank)*

## ITEM 509.COD: CROSSINGS

(Page 509-1. Replace **Item 509.4. Railroad Crossings**, with the following:)

### 509.4.COD: RAILROAD CROSSINGS:

All railroad crossings shall conform to the respective railroad company's requirements with the exception of the following minimum requirements. The CONTRACTOR must obtain insurance and other requirements of the railroad company prior to beginning any work within the railroad right-of-way. *Copies of this information shall be furnished to the OWNER at least 48 hours before beginning construction.*

*Railroad crossings for all sanitary sewer lines and for water lines 12 in. (30.5 cm) and under shall require an encasement pipe at least 2 in. (5.1 cm) greater than the largest outside diameter of the carrier pipe. The diameter of the encasement pipe for water lines over 12 in. (30.5 cm) shall be shown on the plans. Encasement pipe shall be corrugated metal pipe, sectional liner plate, or reinforced concrete to suit conditions of the crossing. The encasement pipe shall be on a minimum of 2.5 percent slope or follow the design guidelines of the controlling railroad. Encasement for water lines over 12 in. (30.5 cm) shall be plugged with concrete at the lower end with a manhole for entrance. Encasement pipes for water lines 12 in. (30.5 cm) and under shall be plugged at the upper end with concrete and at the lower end with a clay core to prevent the entrance of excessive ground water but shall allow water to leak out in case of a pressure leak in the carrier pipe. Where conditions are favorable, a drain shall lead out of the encasement pipe to a free outfall. For all sewer lines, voids between the encasement and carrier pipe shall be grouted per ASTM C 476.*

*The top of the encasement pipe shall be a minimum of 5.5 ft. (1.7 m) below the base of the rails and must be a minimum of 3 ft. (0.9 m) below the flow line of any ditch in railroad right-of-way. The length of encasement pipe shall extend each side from the centerline of the outside track, measured at right angles, a minimum distance of 11 ft. (3.4 m) + 1.5 D + 5 ft. (1.5 m), where D is the depth of the bottom of the encasement below subgrade. The encasement pipe shall be tightly joined to prevent leakage.*

*The encasement pipe may be installed by jacking, boring or tunneling. Regardless of the method used, the encasement pipe shall be installed with even bearing throughout its length, and all voids between the encasement pipe and the earth or rock shall be grouted per ASTM C 476. Timber supports shall not be permitted. Where the railroad right-of-way carries a minor volume of traffic and permission is granted by the railroad, open cutting may be used to install the encasement pipe to within 10 ft. (3.0 m) of the centerline of the outside rails.*

*The carrier pipe shall be of the kind and class shown on the plans with joints made up in place in the encasement pipe or made up outside and pushed through the end if sufficient room is not available inside the encasement pipe.*

*For example: The A.T. & S.F. Railroad Company requires ASTM C 76 Class V, Wall "B," reinforced concrete pipe for encasement pipes 48 in. (121.9 cm) and smaller and Class V, Wall "C," for encasement pipes over 48 in. (121.9).*

*Copies of this information shall be furnished to the OWNER 48 hours before the beginning the crossing*

*(blank)*

## **DIVISION 600 CONDUIT AND APPURTENANCE REHABILITATION**

*(blank)*

## ITEM 601.COD: PIPELINE REHABILITATION

(Page 601-2. Replace **Item 601.4.2.COD: General Construction Requirements**, with the following: (A new paragraph has been added at the end of this Item.)

**601.4.2.COD: GENERAL CONSTRUCTION REQUIREMENTS:** The CONTRACTOR shall certify it has a minimum of two (2) complete working units. Spare key components shall be on the site before each lining.

The field superintendent shall be on the job full-time during any and all steps of the pipe installation.

The CONTRACTOR shall carry out its operations in strict accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving working with hazardous/combustible material, scaffolding, and entering confined spaces.

In the event of a discrepancy, the CONTRACTOR shall immediately notify the *OWNER*. No work shall be performed in an area of discrepancy until it has been fully resolved by the *OWNER*.

The CONTRACTOR shall maintain in operating condition all active pipes encountered during the pipeline rehabilitation. The CONTRACTOR shall be responsible for continuity of service to each facility connected to the section of pipe being reconstructed during execution of the work. The CONTRACTOR, when necessary, shall provide for the flow around the section of pipe designated for rehabilitation. At no time shall wastewater be pumped into the streets, alleys, waterways, or storm drain systems. Bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. Pump and bypass lines shall be of adequate capacity and size to handle the flow. The CONTRACTOR shall ensure that no wastewater overflows from the existing pipe into access pit(s). If wastewater does overflow, the CONTRACTOR shall provide suitable means to contain the wastewater and return it to the existing pipe. If flow backup occurs and enters buildings, the CONTRACTOR shall be responsible for clean up, repair, property damage cost, and claims. CONTRACTOR shall be liable for any damages incurred as a result of inadequate flow bypass measures.

It shall be the responsibility of the CONTRACTOR to clear the existing pipeline of obstructions such as debris, a protruding service connection, dropped joint, or collapsed pipe that will prevent rehabilitation. Any required work must be approved in writing by the *OWNER* and done by the CONTRACTOR. The *OWNER* reserves the right to approve or disapprove of any point repairs identified. If inspection reveals an obstruction that cannot be removed by conventional pipe cleaning equipment, then the CONTRACTOR shall hydraulically reround the pipe or make a point repair excavation to uncover and remove or repair the obstruction. Extreme care shall be used to prevent debris from entering existing pipe prior to rehabilitation.

Pipe grades shall be maintained equal to the grade of the line being rehabilitated. The CONTRACTOR shall correct all grade deficiencies to the satisfaction of the *OWNER* at no additional cost to the *OWNER*. In the event of damage caused to materials, the CONTRACTOR shall make all repairs and replacement necessary to the approval of the *OWNER* at no additional cost to the *OWNER*.

During the warranty period, defects that may affect the integrity or strength of the pipe, in the opinion of the *OWNER*, shall be repaired or the pipe replaced at the CONTRACTOR'S expense.

The CONTRACTOR shall make all required connections to existing pipes and manholes within 12-hours of pipe rehabilitation completion and carry out such work in accordance with local standards and requirements and as directed by the *OWNER*. The CONTRACTOR shall be responsible to confirm the active services prior to reconnection.

**601.4.2.1.COD: POINT REPAIRS ON PRIVATE PROPERTY:** *Point repairs may be required on private property. Point repairs on private property shall be hand excavated using small equipment to cause as little damage as may be necessary to accomplish the work. If fences must be removed to accomplish the work, the CONTRACTOR shall install temporary fencing of like size and construction until permanent fence replacement is accomplished.*

(Page 601-3. Add the following Item:)

**601.4.4.COD: REHABILITATION ADJACENT TO NEW MANHOLES:** *The CONTRACTOR shall not construct new manholes until Pipe Rehabilitation has been completed.*



## **DIVISION 700 STRUCTURES**

---

*(blank)*

## ITEM 701.COD: GENERAL STRUCTURES

(Page 701-1. Add the following:)

### 701.2.1.COD: REMOVAL OF EXISTING STRUCTURES:

**Description:** Removal of existing structures shall consist of the removal and satisfactory disposal of all existing structures and pavements, on the surface or below the ground, which are to be abandoned or removed or which interfere in any way with the new construction, which existing structures are designated for removal on the plans, in these specifications or in the special provisions.

Existing structures shall be defined as buildings, foundations, bridges, culverts, headwalls, walls, linings, enclosures, manholes, inlets, cleanouts, valve boxes, pipes, conduits, junction structures, access structures and other miscellaneous structures or portions thereof of various material composition.

Removal of existing structures shall include the furnishing of all labor, materials, and equipment to accomplish the work to the limits and requirements of the plans, these specifications, and the special provisions.

#### Construction Methods:

##### (a) Removal of existing structures:

Materials or parts of the structures not designated for salvage or which are designated for salvage but which, in the opinion of the OWNER, are not salvageable or which are designated as surplus shall become the property of the CONTRACTOR and shall be disposed of by him at his own cost and expense at sites approved by the OWNER.

Existing structures which are to be abandoned shall be broken off or removed to a depth of not less than 1 foot below the foundation or subgrade of the new work, unless otherwise provided for in the plans and specifications. Construction of bulkheads and structural plugs shall be done as directed by the OWNER and the cost of such work shall be considered incidental to the contract pay items provided. All operations which might endanger new work shall be completed prior to the construction of the new work. Pavement shall be removed only between the lines indicated on the plans. Surface course and sub-base select materials shall be as nearly as practicable removed separately from earth or other excavated materials, stored and utilized as directed by the OWNER. The edges of all openings shall be trimmed smooth and to line, and the face shall be perpendicular to the subgrade.

After removal of structures, all excavations not to be occupied by new work, and all holes created, shall be backfilled in accordance with 504 of the Standard Specifications with approved materials thoroughly compacted in place in lifts of no more than 8 inch thickness (before compaction) and to a density of at least 90 percent of the maximum density determined by ASTM D698 with moisture content within minus 2 to plus 4 of optimum, except that under paved areas, compaction shall be to a density of at least 95 percent.

Damages to adjacent property or structures shall be repaired in a timely fashion, as directed by the OWNER, and shall be repaired by the CONTRACTOR at his sole cost and expense, and to the satisfaction of the OWNER. Any unsightly places created shall be cleaned up and the site of the work left in a neat, clean and orderly condition.

##### b) Removal of Existing Pavement:

Existing concrete pavements, driveways, curbs, gutters, sidewalks, etc., to be removed shall be broken up and disposed of. Care shall be exercised to leave a neat, uniform edge or joint at the excavation limits or sections removed where only portions are to be removed. Removals shall be to the limits shown on the plans, as directed by the OWNER. Materials designated for salvage shall be salvaged in accordance with **Item 701.2.2.COD: Removal And Salvage Of Existing Structures**. Any additional removal required after the initial removal has been made will be performed to the limits directed by the OWNER and be paid for in the manner as prescribed under **Item 104.2. Change or Modification of CONTRACT (with Addendum Items)**, of the Standard Specifications.

Removal of asphalt and aggregate pavements shall be considered part of unclassified street excavation work, unless otherwise specifically provided for in the plans and specifications.

**Measurement and Payment:** When the removal work is called for in the plans and specifications, with separate pay items for such work included, measurement for payment shall be as required in this special provision. Unless otherwise provided in the special provisions or proposals, no payment shall be made for removal of structures and concrete pavements as such, but such work shall be considered as incidental work and the cost thereof shall be included in the contract pay items provided in the proposal and contract.

*When provided for in the proposal and contract, payment for removal of existing structures performed under this special provision shall be made at the unit price bid per each or per lump sum, as specified, for removal of existing structures, which price shall be full compensation for all excavation and backfill; for all breaking up and removal of concrete, steel and associated materials; for loading, hauling, unloading, storage, and disposal of materials and structures, including any disposal fees; and for all materials, labor, tools and incidentals necessary to complete the work in accordance with the plans, specifications and this special provision.*

*When provided for in the proposal and contract, payment for removal of concrete pavement or modular block paver pavement, when not with concrete base, performed under this special provision shall be made at the unit price bid per square yard of concrete or modular block paver pavement actually removed, to the limits shown in the plans and specifications and as directed by the OWNER. Payment for removal of composite block paver and concrete pavements shall be made per square yard of composite pavement actually removed to the limits authorized. Removal of concrete pavement includes removal of variable dimensioned, variable thickness, nonreinforced or reinforced concrete pavement, drives, slabs, integral curbs, and aprons. Pay limits shall be to the back of integral curb removed. Removal of integral curbs shall be considered incidental to removal of the pavement.*

*When provided for, payment for removal of nonreinforced or reinforced concrete sidewalk performed under this special provision shall be made at the unit price bid per square foot of concrete sidewalk removed, to the limits shown in the plans and specifications and as directed by the OWNER. Payment for removal of concrete separate curb or curb with gutter shall be made at the unit price bid per linear foot of concrete curb or curb with gutter actually removed, to the limits shown in the plans and specifications and as directed by the OWNER.*

*The removal of structures, pavements, sidewalks, curbs, or curbs and gutter in excess of the limits shown in the plans and specifications or in excess of what is directed by the OWNER shall be at the entire cost and expense of the CONTRACTOR and such excess removal areas shall be replaced with adequate structure, pavement and materials as determined and directed by the OWNER, at the CONTRACTOR'S entire cost and expense.*

(Page 701-1. Add the following:)

**701.2.2.COD: REMOVAL AND SALVAGE OF EXISTING STRUCTURES:**

**Description:** *Removal and salvage of existing structures shall consist of the removal and salvage of all existing structures and pavements, on the surface, or below the ground, which are to be removed and salvaged, and which interfere in any way with the new construction and which are designated for removal and salvaging on the plans or in these specifications or in the special provisions.*

*Existing structures shall be defined in **Item 701.2.1.COD. Removal of Existing Structures**, and **Item 701.2.2.COD. Removal and salvaging of existing structures**, shall include the furnishing of all labor, materials, and equipment to accomplish the work to the limits and requirements of the plans and these specifications and of the special provisions.*

**Construction Methods:**

**(a) Removal and salvage of existing structures:**

*All structures which are to be salvaged will be designated as such, and shall be removed by the CONTRACTOR under the direction of the OWNER, in such a manner as to prevent their being broken or unduly damaged. The provisions of **Item 701.2.1.COD. Removal of Existing Structures**, shall apply.*

*Materials or parts of structures which are designated to be salvaged, such as lumber, pipe, brick, modular block pavers, concrete, gravel, castings, etc., shall be removed in a manner approved by the OWNER, and stacked at the site of their removal as directed by the OWNER, and shall remain the property of the City. The salvaged materials will be removed from the site by the City unless otherwise specified in the plans and specifications.*

*Materials or parts of the structures not designated for salvage or which are designated for salvage but which in the opinion of the OWNER are not salvageable or which are designated as surplus shall become the property of the CONTRACTOR and shall be disposed of by him at his own cost and expense at sites approved by the OWNER.*

**(b) Measurement and Payment:**

*If the removal and salvage work is called for in the plans and specifications, with separate bid items for such work included, measurement for payment shall be as required in this special provision. Otherwise, no payment shall be made for removal and salvage of structures and concrete pavements as such, but such*

*work shall be considered as incidental work and the cost thereof shall be included in the contract pay items provided in the bid proposal and contract.*

*If specifically provided for in the bid proposal and contract, payment for removal and salvage of existing structures performed under this special provision shall be made at the unit price bid per each or per lump sum, as specified, for removal and salvage of existing structures which price shall be full compensation for all excavation and backfill; for all removal of concrete, steel and associated materials; for salvage and storage of materials and structures; and for all materials, labor, tools and incidentals necessary to complete the work in accordance with the plans, specifications and this special provision.*

*When provided for in the proposal and contract, payment for removal and salvage of modular block paver pavement performed under this special provision shall be made at the unit price bid per square yard of modular block paver pavement actually removed and salvaged, to the limits shown in the plans and specifications and as directed by the OWNER. Payment for removal and salvage of composite block paver and concrete pavements shall be made per square yard of composite pavement actually removed, to the limits authorized.*

*Payment for removal and salvage of concrete separate curb or curb with gutter performed shall be made at the unit price bid per linear foot of concrete curb or curb with gutter actually removed and salvaged, to the limits shown in the plans and specifications and as directed by the OWNER.*

*The removal and salvage of structures, pavements, curbs, or curbs and gutter in excess of the limits shown in the plans and specifications, or in excess of what is directed by the OWNER, shall be at the entire cost and expense of the CONTRACTOR and such excess removal areas shall be replaced with adequate structure, pavement and materials as determined and directed by the OWNER, at the CONTRACTOR'S entire cost and expense.*

(Page 701-1. Add the following:)

#### **701.2.3.COD: ADJUSTMENT OF EXISTING STRUCTURES:**

**Description:** *Adjustment of existing structures shall consist of the adjustment of all existing structures and pavements, on the surface, or below the ground, which are to be adjusted or rebuilt, and which interfere in any way with the new construction and which are designated for adjustment on the plans or in these specifications or in the special provisions.*

*Adjustment of existing structures shall include the furnishing of all labor, materials, and equipment to accomplish the work to the limits and requirements of the plans and these specifications and of the special provisions.*

**Construction Methods:** *Existing structures such as manholes, inlets, cleanouts, valve boxes, pipes, etc. which are designated for adjustment in the plans or specifications shall be adjusted, altered or reset to the required elevation and alignment shown in the plans and specifications, as directed by the OWNER. New materials and workmanship necessary shall conform to the requirements of these specifications covering the particular work. Where manholes are to be built up for 1 foot or less, the walls may be carried up vertically and one new manhole step shall be set in the new wall; where the walls are to be built up for more than 1 foot, the existing walls shall first be removed down to the bottom of the batter or draw-in section of the walls, or to such an elevation that the inside diameter of the manhole is not less than 3-1/2 feet, the manhole shall then be rebuilt in conformity with the size and shape requirements for new manholes. Salvaged materials in good condition may be used in rebuilding such structures with consent of the OWNER, provided the materials are thoroughly cleaned before their use.*

**Measurement and Payment:** *If the adjustment of existing structures work is called for in the plans and specifications, with separate bid items for such work included, measurement for payment shall be as required in this item. Otherwise, no payment shall be made for adjustment of structures and concrete pavements as such, but such work shall be considered as incidental work and the cost thereof shall be included in the contract pay items provided in the bid proposal and contract.*

*If specifically provided for in the bid proposal and contract, payment for adjusting of existing structures performed under this special provision shall be made at the unit price bid per each or per lump sum, as specified, for adjusting of existing structures, which price shall be full compensation for all excavation and backfill; for all breaking up and removal of concrete, steel and associated materials; and for all materials, labor, tools and incidentals necessary to complete the work in accordance with the plans, specifications and this special provision.*

*(blank)*

## ITEM 702.COD: CONCRETE STRUCTURES

(Page 702-2. Replace **Item 702.2.3. Concrete ix Design and Control**, with the following:)

**702.2.3.COD: CONCRETE MIX DESIGN AND CONTROL:** *At least ten days prior to the start of concreting operations, the CONTRACTOR shall submit to the OWNER a design of the concrete mix he proposes to use together with samples of all materials to be incorporated into the mix and a full description of the source of supply of each material component. The proposed batch designs must be submitted to the OWNER on the approved form. The design of the concrete mix shall produce a concrete complying with these specifications and meet the requirements of ACI 318 (1992), PART 3 CONSTRUCTION REQUIREMENTS, CHAPTER 5, Concrete Quality, except as amended by these provisions. The concrete mix design shall include the following information:*

*See **Item 303.5.12.COD: Mix Designs** in the latest City of Dallas Addendum for a copy of the required Concrete Mix Design form which must be used for all batch design submittals.*

*All material samples submitted to the OWNER shall be sufficiently large to permit laboratory batching for the construction of test specimens to check the adequacy of the design. When the design mix has been approved by the OWNER, there shall be no change or deviation from the proportions thereof or sources of supply except as hereinafter provided. No concrete may be placed on the job site until the mix design has been approved by the OWNER in writing to the CONTRACTOR.*

(Page 702-3. Replace **Item 702.2.4.1. Consistency**, with the following:)

**702.2.4.1.COD: CONSISTENCY:** *If the strength or consistency required for the class of concrete being produced is not secured with the minimum cement specified or without exceeding the maximum water/ cement ratio, the CONTRACTOR may use, or the OWNER may require, an approved cement dispersing agent (water reducer); or the CONTRACTOR shall furnish additional aggregates, or aggregates with different characteristics, or the CONTRACTOR may use additional cement in order to produce the required results. The additional cement may be permitted as a temporary measure, until aggregates are changed and designs checked with the different aggregates or cement-dispersing agent.*

*The CONTRACTOR is solely responsible for the quality of the concrete produced. The OWNER reserves the right to independently verify the quality of the concrete through inspection of the batch plant, testing of the various materials used in the concrete and by casting and testing concrete cylinders or beams on the concrete actually incorporated in the structure.*

*(intentional blank space)*

(Page 702-4. Replace **Item 702.2.4.2. Standard Classes**, with the following:)

**702.2.4.2.COD: STANDARD CLASSES:** Standard classes of structural concrete shall meet the requirements in Table 702.2.4.2.(a) Standard Classes of Structural Concrete.

**Table 702.4.2.(a).COD: Standard Classes of Structural Concrete**

Class of Concrete <sup>1</sup>	Minimum Cement Contents per Cubic Yard		Strength		Maximum Water / Cement Ratio <sup>5</sup>	Coarse Aggregate Maximum Size (inches)	Coarse Aggregate and Amendments Thereto
	(lbs./cy)	(Sacks / cy)	28 Day Minimum Compressive Strength (psi)	28 Day Minimum Beam Strength <sup>4</sup> (psi)			
A	470	5.0	3000	500	0.58	1 ½"	2-3-4
B	376	4.0	2000	330	0.71	1 ½"	2-3-4
C	564	6.0	3600	600	0.53	1 ½"	1-2-3 <sup>2</sup>
D	282	3.0 <sup>1</sup>	1500	250	0.97	1 ½"	2-3-4
E	564	6.0	3000	500	0.62	1 ½"	2-3
F	611	6.5	4200	700	0.49	1 ½"	2-3
H <sup>3</sup>	611	6.5	As Specified on the Plans	N.A.	0.49	1"	3
M	As Directed By The OWNER or As Shown On The Plans						

1. Entrained Air will be required in all concrete exposed or partially exposed to the elements.
2. No. 1 coarse aggregate may be used in foundations only (except cased drilled shafts).
3. Prestressed Concrete
4. ASTM C 293 (Center Point).
5. The maximum water/cement ratio in pounds/pound will be computed based on total Cementitious Material

Entrained air will be required in all concrete exposed or partially exposed to the elements. The concrete will be designed to entrain 5 percent air when Grade 1 or 2 Coarse Aggregate is used, 6 percent when Grade 3 Coarse Aggregate is used and 7 percent for Grade 4, unless otherwise shown on the plans. Concrete as placed in the structure shall contain the proper amount of air as required herein with a tolerance of plus or minus the 1.5 percentage points. Entrained air shall conform to the requirements of **Item 303.2.3. Chemical Admixtures**.

During the progress of the work, the OWNER shall cast a set of four test cylinders or two test beams, perform slump and entrained air tests and will make temperature checks, as required to ensure compliance with the specifications. As a minimum, these tests will be required for each 40 cubic yards, or portion thereof, placed each day. For small placements, tests may be made for each 25 cubic yards placed over a several-day period.

The two test beams shall be tested at an age of 7-days for compliance with the specified strength. Two cylinders shall be tested at 7-days and the remaining two cylinders shall be tested at an age of 28-days for specification compliance.

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

The CONTRACTOR shall be responsible for the proper storage, maintenance, and any required curing of concrete test samples made by OWNER

The CONTRACTOR, if directed by the OWNER, shall provide and maintain curing facilities for the purpose of curing concrete test specimens. Provisions shall be made to maintain the water in the curing tank at temperatures between 70 degrees Fahrenheit (21 °C) and 90° Fahrenheit (32 °C). The cost of all materials used in test specimens and the cost of storing, maintaining and of providing and maintaining curing facilities will not be paid for as a separate contract pay item, and the costs thereof shall be considered incidental to the contract pay items provided.

*Additional cylinders or beams may be made by the OWNER as required by concrete placing conditions, or for adequately determining the strength of the concrete where the early use of the structure is dependent upon the concrete strength tests. No extra compensation will be paid to the CONTRACTOR for materials and labor involved in fulfilling these requirements.*

*Concrete that shall meet the specified design strength requirements within 28-days after the placement, shall be considered of acceptable strength. Job control shall be by seven-day compressive tests that are shown to provide the required 28-day strength, based on results from trial batches. If the required seven-day strength is not secured with the cement specified in Table -- CLASSES OF CONCRETE, changes in the batch design shall be made as specified in 303.3.4. The test cylinders shall be tested at the age of 28 days in order to determine the compressive strength. Should any set of test cylinders representing a given area or section of the structure fail to meet the strength requirements, that area shall be considered to be composed of concrete having deficient compressive strength.*

*For any area having a deficient compressive strength, the CONTRACTOR shall have the privilege of cutting cores for a final compressive strength check, if, in the opinion of the OWNER, it is practicable or advisable to core the particular area or section involved. The cores shall be cut and tested within thirty days after the concrete has reached the age of 28 days, from locations designated by the OWNER. A minimum of two cores of approved dimensions for each area in question shall be taken from locations designated by the OWNER for a compressive strength value. A compressive strength value shall be the average of the strengths of all cores taken for that area. For any designated area, a maximum of four cores will be permitted to be cut and tested for determining the compressive strength value. The CONTRACTOR may cut additional cores for the purpose of defining the area of deficient strength, if approved by the OWNER.*

*The cores shall be tested by standard laboratory methods, and the strengths determined thereby shall be conclusive. In order to fulfill the requirements of this special provision, the strength of the cores shall not be less than the specified compressive strength. The cost of cutting cores, testing, and making subsequent repairs to the structure shall be at the entire expense of the CONTRACTOR.*

*If, in the opinion of the OWNER, it is not practicable or advisable to core the particular area or section of the structure in question, the compressive strength value as determined by the test cylinders shall be conclusive.*

*For areas or sections of the structure having a deficient compressive strength, the OWNER will require that the deficient area be removed and replaced with concrete conforming to the requirements of these specifications at the entire cost and expense of the CONTRACTOR; or the OWNER may require that an adjustment of payment be made in accordance with the requirements hereinafter specified. The OWNER will decide which course of action will be in the best interest of the OWNER, and the OWNER'S decision will be final.*

*The minimum compressive strength for concrete used in reinforced concrete load-carrying structures shall not be less than that specified. Concrete having deficient strength as determined by the procedure described in this special provision and 702.2.4.1 of the Standard Specifications will be removed and that portion of the structure rebuilt.*

*The area of concrete concerned in the adjustment or removal shall be the designated area represented by the compressive strength values determined as herein above specified. The area to be measured for adjustment or removal shall be determined in the manner directed by the OWNER.*

*The cost of removal and replacement of any structure or portion of a structure due to deficient concrete strength shall be borne totally by the CONTRACTOR. For nonload-carrying structures, if the concrete compressive strength is less than the minimum required strength, the amount of reasonable liquidated damages per cubic yard of concrete having a deficient strength shall be in accordance with the following table:*

<b>Percent Deficient</b>	<b>Amount of Liquidated Damages</b>
0-5%	5% of Concrete Unit Price/CY
Greater than 5% - Not more than 10%	10% of Concrete Unit Price/CY
Greater than 10% - Not more than 15%	20% of Concrete Unit Price/CY

*The amount of Liquidated Damages shall be deducted from payment due or to become due to the CONTRACTOR; the purpose of the deduction is to defray the cost of extra maintenance, which cost is fixed because of the impracticability and extreme difficulty of figuring the actual cost, and such amounts are agreed to be the damages the OWNER would sustain and retain from any contract amounts due.*

*All concrete having a strength more than 15 percent deficient shall be removed and replaced with concrete meeting the requirements of these specifications at the entire cost and expense of the CONTRACTOR.*

(Page 702-5. Replace **Item 702.2.4.4. Slump** with the following. (A new Table 702.2.4.4.(a) Structural Concrete Slump Requirements, has been added.))

**702.2.4.4.COD: SLUMP:** Slump requirements for structural concrete shall be as specified in Table 702.2.4.4.(a) Structural Concrete Slump Requirements. No concrete shall be permitted with slump in excess of the maximums shown. Any concrete mix failing to meet the above consistency requirements, although meeting the slump requirements, shall be considered unsatisfactory, and the mix shall be changed to correct such unsatisfactory conditions.

**Table 702.2.4.4.(a).COD: Structural Concrete Slump Requirements**

Concrete Use	Average Slump (inches)	Maximum Slump (inches)
<i>Cased Drilled Shafts and Thin Walled Sections (9 inches or less)</i>	4	5
<i>Slabs, Caps, Columns, Piers, Wall Sections over 9 inches, etc.</i>	3	4
<i>Underwater or Seal Concrete</i>	5	6
<i>Riprap, Curb, Gutter, and Other Miscellaneous Concrete</i>	As Specified By OWNER	

**NOTE:** No concrete shall be permitted with slump in excess of the maximums shown. Any concrete mix failing to meet the above consistency requirements, although meeting the slump requirements, shall be considered unsatisfactory; and the mix shall be changed to correct such unsatisfactory conditions.

(Page 702-9. Replace **Item 702.4.8.1. General**, with the following: (A new sentence has been added to the end of the third paragraph and **Table 702.4.8.1.(a) Interval Between Mixing and Placing Concrete**, has been corrected.))

**702.4.8.1.COD: GENERAL:** The CONTRACTOR shall give the OWNER sufficient advance notice before starting to place concrete in any unit of the structure to permit the inspection of forms, the reinforcing steel placement, and preparation for casting. No concrete shall be placed in any unit prior to the completion of the formwork, the placement of the reinforcement and approval by the OWNER. Concrete mixing, placing and finishing shall be done in daylight hours, unless adequate provisions are made to light the entire site of all operations.

The minimum temperature of all concrete at the time of placement shall be not less than 50°F (10°C). The maximum temperature of Class C, F, H, X, Y and Z or Class PC, PF, PH (as specified by the OWNER) cast-in-place concrete used in bridge superstructures shall not be more than 85°F (29°C) at the time of placement. Concrete diaphragms, parapets, concrete portions of railings, curbs and sidewalks, unless monolithically placed with the slab, may not be subject to the preceding control if approved by the OWNER in writing. Other portions of structures, when so noted on the plans, shall require the temperature control specified thereon.

A retarding admixture shall be used when the continuous placing method is used in the deck of continuous units. The initial set of the concrete shall be retarded sufficiently to insure that the concrete remains plastic in not less than three spans immediately preceding the one being placed. For simple spans, retardation shall be required only if necessary to complete finishing operations or as required by **Item 303. Portland Cement Concrete Pavement (with Addendum Items)**. The retarding admixture shall be in accordance with the requirements of **Item 702.1.3. Concrete Additives and Modifiers**. *The use of an approved cement-retarding agent in the concrete shall permit the extension of each of the above temperature-time maximums by 30 minutes, except that for non-agitated concrete, the maximum time shall not exceed 30 minutes.*

The consistency of the concrete as placed should allow the completion of all finishing operations without the addition of water to the surface. When conditions are such that additional moisture is needed for finishing, the required water shall be applied to the surface by fog spray only and shall be held to a minimum amount.

The maximum time interval between the addition of cement or mixing water to the batch and the placing of concrete in the forms shall not exceed amounts shown in **Table 702.4.8.1.(a).COD: Interval Between Mixing and Placing Concrete**.

**Table 702.4.8.1.(a).COD: Interval Between Mixing and Placing Concrete**

Type	Air or Concrete Temperature		Maximum Time <sup>1</sup>
	°F	°C	
<b>Nonagitated Concrete</b>			
	80 °F or above	(26.6 °C)	15 minutes
	35 °F to 79 °F	(1.6 °C to 26.1°C)	30 minutes
<b>Agitated Concrete</b>			
	90 °F or above	(32.2°C)	45 minutes
	75 °F to 89°F	(23.9 °C to 31.6 °C)	60 minutes
	35 °F to 74°F	(1.6 °C to 23.3 °C)	90 minutes

1. The use of an approved cement-dispersing agent in the concrete shall permit the extension of each of the temperature-time maximums by 30-minutes, except that for non-agitated concrete, the maximum time shall not exceed 30-minutes.

The sequence of placing concrete shall be as provided on the plans or in the specifications. The placing shall be so regulated that the pressures caused by the plastic concrete shall not exceed the loads used in the design of forms.

The method of handling, placing, and consolidation of concrete shall minimize segregation or the displacement of the reinforcement and shall produce a compact mass of uniform texture. Concrete shall not have a free fall of more than 3-ft. (0.9m) except in the case of thin walls such as culvert walls. The spattering of forms or reinforcement bars shall be prevented if the concrete so spattered shall dry or harden before being incorporated into the mass.

Laitance or foreign matter of any kind shall not be permitted to accumulate inside the forms, and openings in forms necessary for removal of same shall be provided.

Any hardened concrete spatter ahead of the plastic concrete shall promptly be removed from the work.

Each part of the forms shall be filled by depositing concrete as near its final position as possible. The coarse aggregate shall be worked back from the face and concrete forced under and around the reinforcement bars without displacing them. Depositing large quantities at one point in the forms and running or working it along the forms shall not be allowed.

After the concrete has taken initial set, the forms shall not be jarred or any strain placed on projecting reinforcement.

Chutes, troughs, conveyors, or pipes used in placing concrete shall be arranged and used so that the ingredients of the concrete shall not be separated. When steep slopes are necessary, the chutes shall be equipped with baffle boards or made in short lengths that reverse the direction of movement, or the ends of such chutes shall terminate in vertical downspouts. Open troughs and chutes shall extend, if necessary, down inside the forms or through holes left in the forms. All chutes, troughs, conveyors, and pipes shall be kept clean and free from coatings of hardened concrete by a thorough flushing with water before and after each placement. Water used for flushing shall be discharged clear of the concrete.

Concrete shall be deposited in the forms in layers of suitable depth but not more than 36-in. (0.9m) in thickness, unless otherwise directed by OWNER.

Holes for anchor bolts in piers, abutments, bents, or pedestals may be drilled or may be formed by the insertion of oiled wooden plugs or metal sleeves in the plastic concrete. The plugs or sleeves shall be withdrawn after the concrete has set. Formed holes shall be of such diameter to permit horizontal adjustments of the bolts. The bolts shall be set carefully in mortar in lieu of the above methods of placing. Anchor bolts may be set to exact location in concrete when it is placed.

The placing of concrete for deck slabs shall be done from a mixing plant located off the structure. Carting or wheeling concrete batches over a completed slab shall not be permitted until the slab has aged at least four full curing days. If carts are used, timber planking shall be required for the remainder of the curing period. Carts shall be equipped with pneumatic tires. Curing operations shall not be interrupted for the purpose of wheeling concrete over finished slabs.

(Page 702-14. Replace **Item 702.4.9. Finishing Concrete**, with the following: (A new sentence has been added at the end of this Item))

**702.4.9.COD: FINISHING CONCRETE:** All upper horizontal surfaces not covered by forms shall be struck off to grade and finished. The use of mortar topping for surfaces under this classification shall not be permitted.

After concrete has been struck off as described above, the surface shall be floated with a suitable float. Bridge sidewalks shall be given a wood float or broom finish or may be striped with a brush, as specified by the OWNER. Unless otherwise specified, top of caps and piers shall be given a smooth finish with a steel trowel. Other surfaces shall be wood float finished and striped with a fine brush leaving a fine-grained texture. *No water or dry cement is to be added to the surface of concrete for finishing.*

(Page 702-14. Replace **Item 702.4.10. Curing**, with the following: (A new paragraph has been added.))

**702.4.10.COD: CURING CONCRETE:** Careful attention shall be given to the proper curing of all concrete. CONTRACTOR shall inform OWNER fully of the methods and procedures proposed for curing, shall provide proper equipment and material in adequate amounts, and shall have approval of the proposed method, equipment, and material prior to placing concrete.

*Curing compound may not be used on construction joints or other surfaces that require further surface treatment.*

Inadequate curing facilities or lack of attention to the proper curing of concrete shall be cause for OWNER to stop all construction on the job until approved curing is provided.

## **DIVISION 800 MISCELLANEOUS CONSTRUCTION AND MATERIALS**

*(blank)*

## ITEM 801.COD: BARRIERS, WARNING & DETOUR SIGNS, AND FENCES

(Page 801-2. Replace **Item 801.4.3.1. General**, with the following:(The last sentence has been changed))

### **801.4.3.COD: CONSTRUCTION METHODS:**

**801.4.3.1.COD: GENERAL:** Chain link fence shall be constructed in accordance with the details on the plans and ASTM F567 Standard Practice for Installation of Chain-Link Fence, and as specified herein, with new materials unless specified otherwise. Chain Link Fence for Tennis Courts shall be constructed in accordance with ASTM F969 Standard Practice for Construction of Chain-Link Tennis Court Fence. Chain link fence for ballfields and other sports facilities shall be constructed in accordance with ASTM F2000 Standard Guide for Fences for Ballfields and Other Sports Facilities. All work shall be performed in a workmanlike manner satisfactory to the OWNER. *The CONTRACTOR shall locate the position of work according to the plans.*

*(blank)*

## ITEM 802.COD: STEPS AND RETAINING WALLS

(Page 802-. Replace **Item 802.4.3.2. Backfill**, with the following: (A new sentence has been added to the end of the item and a new paragraph has been added.))

**802.4.3.2.COD: BACKFILL:** *No backfill shall be permitted to be placed, except in the presence of the OWNER. Structural backfill shall not be placed until the structure footings or other portions of the structure or facility have been inspected by the OWNER and approved for backfilling. As soon as practicable, all spaces excavated under this item and not occupied by the permanent structure shall be backfilled, except that no backfill shall be placed against any abutment or retaining wall until such structure has been in place at least 7-days. No backfill shall be placed adjacent to box culverts until the top slab has been in place at least 4-days. When called for on the plans, special backfill material, such as pit run gravel, shall be placed at the locations and in the manner called for on the plans. All other backfill material shall be earth, free of any appreciable amount of stone or gravel particles more than 4-in. (10cm) in the greatest dimension, large or frozen lumps, wood or other extraneous material, and shall be of such gradation as to permit thorough compaction as required by the OWNER. Class C or Class PC concrete as specified by the OWNER will be used in inaccessible locations when a mechanical device cannot compact to required densities and as directed by the OWNER, i.e., under pipes, roads, washouts, paving, etc. Compaction testing will be performed by the OWNER or its approved testing laboratory. If the compacted material does not meet the specified compaction, the CONTRACTOR will be required to rework the material and pay the cost of retesting. Class C concrete will be used in inaccessible locations when a mechanical device cannot compact to required densities and as directed by the OWNER, i.e., under pipes, road, washouts, paving, etc.*

**802.4.3.2.1.COD: COMPACTION TESTING:** *Compaction testing will be performed by the OWNER or his approved testing laboratory. If the compacted material does not meet the specified compaction, the CONTRACTOR will be required to rework the material and pay the cost of retesting.*

*(blank)*

## ITEM 803.COD: SLOPE AND CHANNEL PROTECTION

(Page 803-7. Replace **Item 803.3.4. Measurement and Payment**, with the following: (The first sentence was replaced))

**803.3.4.COD: MEASUREMENT AND PAYMENT:** *Riprap shall be measured for payment either in square yards ( $yd^2$ ) of the specified minimum thickness, or in cubic yards ( $yd^3$ ) where changes are ordered or approved by the OWNER or by ton of material in place. Measurement of riprap will be based on specified trench width plus 2 feet. In the event of excessive excavation, the CONTRACTOR will be required to rip rap the entire excavation plus 1 foot on both sides with no additional compensation. Riprap shall be paid for at the contract unit price complete in place, as provided in the proposal and contract. The contract unit price shall be the total compensation for preparing the subgrade, including excavation; for furnishing and placing all materials; for furnishing, placing, shaping, and tamping backfill; for proper disposal of all surplus materials; and for all labor, tools, equipment, and incidentals necessary to complete the work, all in accordance with the plans and these specifications.*

*(blank)*

## ITEM 804.COD: PAINTING AND OTHER PROTECTIVE TREATMENTS; PAVEMENT MARKINGS

(Page 804-2. Replace **Item 804.2.3.1. Descaling, Cleaning, and Preparation of Surface**, with the following: (Only the first paragraph has been retained.)

**804.2.3.1.COD: DESCALING, CLEANING AND PREPARATION OF SURFACE:** Throughout paint application, including shop and field painting, no paint shall be applied over a surface that evidences a loose or scaly condition. Every effort shall be made by means of the most effective and practical methods to remove all loose mill scale, rust, dirt, oil and grease, as well as all other foreign surfaces, which would be deleterious to the procurement of the firm paint coating. The original cleaning and preparation of the surface necessarily must be done at the fabricating plant before application of the shop coat, but the same general requirements for painting over a clean, firm surface shall be applicable to all coats.

*Four methods of cleaning are provided herein. The first method shall be used unless otherwise specified.*

- (1) **Power Wire Brushing:** *Clean all accessible areas by heavily brushing with power wire brushes. Avoid getting any oil or grease on the steel from the brushing operation, and avoid "polishing" of tightly adhering mill scale. Supplement with hand cleaning in accessible areas, welds and spatter, and for removing oil and grease. Brush off all loose dust.*
- (2) **Hand Cleaning:** *The removal of rust, scale, and dirt shall be done by the use of metal brushes, scrapers, chisels, hammers or other effective means. Oil and grease shall be removed by the use of cleaning naphtha, applied with clean rags in such manner that the oil substance is actually removed and not simply diluted or spread out over a greater area. Bristle or wood fiber brushes shall be used for removing loose dust.*
- (3) **Sandblasting:** *All deposits of oil and grease shall be removed by solvent cleaning as above specified prior to sandblasting. The sandblasting shall remove all loose mill scale and other substances down to the bare metal. Special attention shall be given to cleaning of corners and re-entrant angles. Before painting, sand adhering to steel corners and elsewhere shall be removed. Sandblast-cleaned surfaces shall be covered completely with the initial coat of paint within 8-hours after cleaning, or shall be re-cleaned by sandblasting immediately prior to painting.*
- (4) **Flame Cleaning:** *Oil, grease, and similar matter shall be removed by solvent cleaning as above specified prior to flame cleaning. The oxyacetylene flame (with an oxygen to acetylene ration of at least one) shall be traversed over the surfaces of the steel in such a manner and at such speed that the surfaces are dehydrated and dirt, rust, loose scale, scale in the form of blisters or scabs, and similar foreign matter are freed by the rapid, intense heating by flame. The flames shall not be traversed so slowly that loose scale or other foreign matter is fused to the surface of the steel.*

**804.2.3.1.1.COD: FAULTY SURFACE PREPARATION:** *The OWNER shall look for evidence of faulty surface preparation preceding the shop coat by close inspection of the surface directly prior to application of first field coat, likewise, between first and second field coats. This careful inspection directly in advance of paint application may disclose not only loose, scaly conditions on the surface as a result of faulty preparation but also failure of the paint to harden because of contamination and changes which might have taken place beneath the paint film as a result of rusting and loosening of mill scale after paint has been applied.*

- (1) *Therefore, whenever the OWNER has the slightest doubt as to the firm condition of the surface at any time throughout the application of any coats, OWNER shall be expected to explore underneath the surface of any paint coats already applied so as to uncover evidence of infirmity and to direct remedial measures. Any effective methods for removal of rust, scale and dirt, such as through the use of sandblast, hand or rotating metal brushes, scrapers, chisels, hammers or other effective means, shall be acceptable. Undesirable contaminants, which are not allowed to be present on the surface directly prior to paint application and which shall prevent proper hardening and adhesion of the paint film, are grease, oil, oily grime, and moisture. Condensed moisture shall be avoided, and other grease-like contaminants shall be removed with solvents, applied with clean rags in such a manner that the oily substance is actually removed and not simply diluted or spread out over a greater area. Particular attention shall be given to the cleaning of fillets, riveted areas, rivet-heads, bolt heads, nuts, washers, drilled or punched holes and welds where loose mill scale, rust, oil and flux are likely to be present.*
- (2) *Unless cleaning is to be done by sandblasting, all weld areas shall be flushed thoroughly with clean water before painting so as to remove any alkaline residue. The flushed surface shall be allowed to thoroughly dry before paint application.*

*(blank)*

## ITEM 805.COD: ELECTRICAL COMPONENTS AND CONDUIT

(Page 805-1. Replace **Item 805.2.2. Drawings**, with the following: (The last two sentences have been added.))

**805.2.2.COD: DRAWINGS:** Drawings are not intended to and do not show all materials such as junction boxes, outlet boxes, conduit fittings and similar components. Even though such material components may not be specifically mentioned in the specifications, shown on the drawings, or noted on shop drawings, if they are necessary to make a complete installation, they shall be included in the materials required under these specifications. *All supplied extra material to make systems operational must be shown on record drawings. Copies of the updated record drawings shall be submitted to the OWNER.*

(Page 805-2. Replace **Item 805.4. Conduit Construction Methods**, with the following (The entire fifth paragraph has been deleted):)

### **805.4.COD: CONDUIT CONSTRUCTION METHODS:**

Prior to the installation of conduit, the OWNER shall be notified so that a representative will be present to inspect the installation of the conduit. Failure to contact the OWNER shall constitute grounds for rejecting conduit, which has been installed without the presence of a representative of the OWNER.

All conduits shall be placed in accordance with lines and grade, details and dimensions as shown on the plans, or as directed by the OWNER. All ends of pipe shall be reamed to remove burrs. All splicing of conduit shall be done by using standard couplings manufactured for this purpose. All bare ends of conduit for future connections by others shall be capped with standard conduit caps. The location of ends of all conduit for future electrical circuits in structures shall be marked by a "Y" at least 3-in. (76mm) high, cut into the face of curb, gutter or wall directly above the conduit.

Conduit in medians or under pavements shall be placed at a minimum depth of 30-in. (76cm) from the top of curb as shown on the plans. Installation under existing pavements shall be accomplished by boring. Conduit shall extend 6-in. (15cm) behind back of curb unless otherwise called for on the plans. Where pull boxes or junction boxes are required in medians, which are to be surfaced, they shall be installed by the CONTRACTOR at the location and grade as shown on the plans or as directed by the OWNER.

Unless otherwise specified in the special provisions or on the plans, all pull-boxes shall be furnished by the CONTRACTOR. All necessary fittings for proper installation of conduit in the pull-box shall be furnished and installed by the CONTRACTOR. Where it is required that pull-boxes be installed, the conduit shall be fitted with sweeping 90° fittings to enter the pull-box from the bottom. A nipple shall be attached to the fitting of sufficient length so that the distance from the top of the pull-box to the end of the nipple shall be 8-in. (20cm.)

Conduit bends, except factory bends, shall have a radius of not less than seven (7) times the inside diameter of the conduit. Where factory bends are not used, conduit shall be bent, without crimping or flattening, using a portable hydraulic pipe bender. The radius of the pipe shall conform to the dimensions shown on the plans; if not designated on the plans, the longest radius practicable shall be used.

Conduit locations shown on the plans are for bidding purposes only and may be changed with permission of the OWNER to avoid underground obstacles. The CONTRACTOR shall furnish and install conduit to an electrical service point to be determined by the OWNER prior to the beginning of any construction.

(end of document)