

**Project Manual**  
**for:**  
**Green Tee Terrace Bike and Pedestrian Trail**  
**City of Pearland, TX**



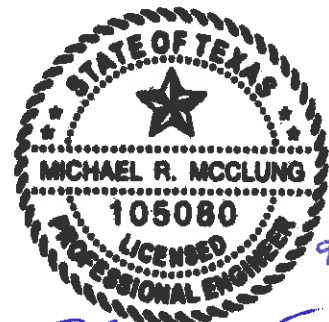
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Document 00010-T

## TABLE OF CONTENTS

<b><u>SECTION</u></b>	<b><u>TITLE</u></b>	<b><u>Page No.</u></b>
<b><u>VOLUME 1</u></b>		
<b>DIVISION 0 – BIDDING AND CONTRACT DOCUMENTS</b>		
<b>INTRODUCTORY INFORMATION</b>		
00010-T	Table of Contents	2
00015	List of Drawings	7
<b>BIDDING REQUIREMENTS</b>		
00100	Invitation to Bid	9
00110-T	LGPP Abbreviations & Definitions Supplement	14
00200	Instructions to Bidders	25
00200A-T	Instructions to Bidders Appendix: LGPP Bid Checklist	34
00210-T	LGPP Supplement to Instructions to Bidders	36
00300	Bid Proposal Part A & B	43
00310-T	LGPP Award and Execution of the Contract	47
00456	Bidder's Certification of Compliance with Buy American Program	51
00457	Conflict of Interest Questionnaire	52
<b>CONTRACTING REQUIREMENTS</b>		
<b>AGREEMENT</b>		
00500	Standard Form of Agreement	54
00500A	Standard Form of Agreement Appendix A: Title VI Assurances	61
00500B	Standard Form of Agreement Appendix B: House Bill 89 Verification	63
00550	Ethics Certification Form 1295 Certificate of Interested Parties	64
<b>BONDS AND CERTIFICATES</b>		
00610	Performance Bond	65
00611	Payment Bond	67
00612	One-Year Maintenance Bond	69
00615	Partial Waiver of Lien and Payment Affidavit	71
<b>GENERAL CONDITIONS</b>		
00700	General Conditions of Agreement Table of Contents	72
	General Conditions of Agreement	77
	Attachment No. 1 – Worker's Compensation Insurance Coverage	113

	Attachment No. 2 – Agreement for Final Payment and Contractor’s Sworn Release	116
	Attachment No. 3 – Owner’s Insurance Requirements of Contractor	120
00770-T	Item 4L-LGPP General Conditions & Scope of Work	130
00780-T	Item-5L-LGPP General Conditions & Control of Work	136
00790-T	Item-6L-LGPP Control of Materials	144
00795-T	Item-7L-LGPP Legal Relations & Responsibilities	150
00796-T	Item-8L-LGPP Prosecution and Progress	163
00797-T	Item-9L-LGPP Measurement and Payment	175

#### **SUPPLEMENTARY CONDITIONS**

00800	Special Conditions of Agreement	183
00811-T	Wage Rates Wage Scale for Engineering Construction	185
00850-T	TxDOT LGPP Requirements	189
	• FHWA-1273 Required Contract Provisions	190
	• Bidder Certification (1 page)	202
	• Buy America Provision (2 pages)	203
	• Buy America – Material Statement (1 page)	205
	• Child Support Statement (1 page)	206
	• Child Support Business Ownership Form (1 page)	207
	• Contractor Acknowledgement of Storm Water Mgmt Plan Program (1 page)	208
	• Contractor’s Assurance (1 page)	209
	• Debarment Certification (3 pages)	210
	• Differing Site Conditions (1 page)	213
	• Disadvantages Business Enterprise Requirements1 (1 page)	214
	• DBE Commitment Agreement Form (1 page)	215
	• DBE Material & Supplier Commitment Agreement Form (1 page)	216
	• DBE Substitution Request Form (1 page)	217
	• DBE Commercially Useful Function Project Site Review (1 page)	218
	• DBE Trucking Credit Worksheet (1 page)	219
	• DBE Good Faith Effort – Prime Contractor (4 pages)	220
	• DBE Monthly Progress Report (1 page)	225
	• DBE/SBE Prompt Payment Certification (1 page)	226
	• DBE Prime Contractor Payment to Non-DBE Subcontractors (1 page)	227
	• DBE Final Report (1 page)	228
	• Equipment Rental Rates (2 pages)	229
	• Lobbying Certification Forms (2 pages)	231
	• Non-Collusion Statement (1 page)	233
	• Affidavit (1 page)	234
	• Payroll Verification Information (1 page)	235
	• Prison Produced Materials Provision (1 page)	236
	• Railroad insurance Provision (2 pages)	239
	• SBE Monthly Progress Report (1 page)	239

•	TxDOT Certificate of Insurance - Form 1560 (2 pages)	240
00900	Addendum	242
<b>2014 LOCAL GOVERNMENT SPECIAL PROVISIONS</b>		
SP 000-001L	Schedule of Liquidated Damages	243
SP 000-002L	Nondiscrimination	244
SP 000-003L	Certification of Nondiscrimination in Employment	246
SP 000-004L	Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)	247
SP 000-005L	Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)	251
SP 000-394L	Disadvantaged Business Enterprise in Federal Aid Contracts	255
SP 002-011L	Instructions to Bidders	262
SP 007-001L	Legal Relations and Responsibilities	263
SP 506-001L	Temporary Erosion, Sedimentation, and Environmental Controls	265

**GENERAL NOTES**

City of Pearland General Notes	276
General Construction Notes	277
Brazoria Drainage District #4	279
Utility Notes	280
Harris County Flood Control District General Notes	281
Pedestrian Bridge Notes	282
2014 TxDOT General Notes	284

For the following TxDOT and City of Pearland Specifications, note the bold Specification Sections are included in <https://www.txdot.gov/business/resources/txdot-specifications.html> and <https://www.pearlandtx.gov/departments/engineering-and-capital-projects/engineering/standard-construction-documents> respectively. These bold specifications are incorporated in Project Manuals by reference as if copied verbatim.

**TXDOT 2014 STANDARD SPECIFICATIONS**

<b>Item 104</b>	<b>Removing Concrete</b>
<b>Item 166</b>	<b>Fertilizer</b>
<b>Item 168</b>	<b>Vegetative Watering</b>
<b>Item 170</b>	<b>Irrigation System</b>
<b>Item 260</b>	<b>Lime Treatment (Road-Mixed)</b>
<b>Item 402</b>	<b>Trench Excavation Protection</b>
<b>Item 416</b>	<b>Drilled Shaft Foundations</b>
<b>Item 420</b>	<b>Concrete Substructures</b>
<b>Item 432</b>	<b>Riprap</b>
<b>Item 438</b>	<b>Cleaning and Sealing Joints</b>

<b>Item 450</b>	<b>Railing</b>	
<b>Item 454</b>	<b>Bridge Expansion Joints</b>	
<b>Item 462</b>	<b>Concrete Box Culvert and Drains</b>	
<b>Item 464</b>	<b>Reinforced Concrete Pipe</b>	
<b>Item 465</b>	<b>Junction Boxes, Manholes, and Inlets</b>	
<b>Item 496</b>	<b>Removing Structures</b>	
<b>Item 502</b>	<b>Barricades, Signs, and Traffic Handling</b>	
<b>Item 506</b>	<b>Temporary Erosion, and Sedimentation, and Environmental Controls</b>	
<b>Item 531</b>	<b>Sidewalks</b>	
<b>Item 636</b>	<b>Signs</b>	
<b>Item 644</b>	<b>Small Roadside Sign Assemblies</b>	

### **TXDOT 2014 SPECIAL SPECIFICATIONS**

<b>Item 1002</b>	<b>LANDSCAPE AMENITY</b>	<b>303</b>
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### **CITY OF PEARLAND SPECIAL SPECIFICATIONS**

<b>02916</b>	<b>Soil Treatment</b>	<b>304</b>
<b>02921S</b>	<b>Hydromulch Seeding Supplemental</b>	<b>310</b>
<b>02922S</b>	<b>Sodding Supplemental</b>	<b>317</b>
<b>02931S</b>	<b>Landscape and Tree Planting Supplemental</b>	<b>321</b>

### **DIVISION 1 – GENERAL REQUIREMENTS**

<b>01100</b>	<b>Summary of Work</b>	<b>335</b>
<b>01100</b>	<b>Allowances</b>	
<b>01140</b>	<b>Contractor's Use of Premises</b>	
<b>01200</b>	<b>Measurement and Payment Procedures</b>	
<b>01290</b>	<b>Change Order Procedures</b>	
<b>01310</b>	<b>Coordination and Meetings</b>	
<b>01350</b>	<b>Submittals</b>	
<b>01380</b>	<b>Construction Photographs</b>	
<b>01420</b>	<b>Referenced Standards</b>	
<b>01430</b>	<b>Contractor's Quality Control</b>	
<b>01440</b>	<b>Observation Services</b>	
<b>01450</b>	<b>Testing Laboratory Services</b>	
<b>01500</b>	<b>Temporary Facilities and Controls</b>	
<b>01505</b>	<b>Mobilization</b>	
<b>01550</b>	<b>Stabilized Construction Exit</b>	
<b>01560</b>	<b>Filter Fabric Fence</b>	
<b>01561</b>	<b>Reinforced Filter Fabric Barrier</b>	
<b>01562</b>	<b>Waste Material Disposal</b>	
<b>01563</b>	<b>Tree and Plant Protection</b>	
<b>01564</b>	<b>Control of Ground Water and Surface Water</b>	
<b>01565</b>	<b>TPDES Requirements</b>	
<b>01570</b>	<b>Trench Safety System</b>	

<b>01580</b>	<b>Project Identification Signs</b>
<b>01600</b>	<b>Material and Equipment</b>
<b>01630</b>	<b>Product Options and Substitutions</b>
<b>01720</b>	<b>Field Surveying</b>
<b>01760</b>	<b>Project Record Documents</b>
<b>01770</b>	<b>Contract Closeout</b>

**DIVISION 2 – SITE WORK**

<b>02200</b>	<b>Site Preparation</b>
<b>02220</b>	<b>Site Demolition</b>
<b>02252</b>	<b>Cement Stabilized Sand</b>
<b>02255</b>	<b>Bedding, Backfill, and Embankment Materials</b>
<b>02316</b>	<b>Excavation and Backfill for Roadways</b>
<b>02317</b>	<b>Excavation and Backfill for Structures</b>
<b>02318</b>	<b>Excavation and Backfill for Utilities</b>
<b>02330</b>	<b>Embankment</b>
<b>02335</b>	<b>Subgrade</b>
<b>02370</b>	<b>Geotextile</b>
<b>02510</b>	<b>Water Mains</b>
<b>02511</b>	<b>Water Meters</b>
<b>02534</b>	<b>PVC Pipe</b>
<b>02582</b>	<b>Thermoplastic Pavement Markings</b>
<b>02631</b>	<b>Precast Inlets, Headwalls, and Wingwalls</b>
<b>02751</b>	<b>Concrete Paving</b>
<b>02762</b>	<b>Temporary and Removable Pavement Markings</b>
<b>02770</b>	<b>Curb, Curb &amp; Gutter, and Headers</b>
<b>02771</b>	<b>Concrete Sidewalks</b>
<b>02910</b>	<b>Topsoil</b>
<b>02921</b>	<b>Hydromulch Seeding</b>
<b>02922</b>	<b>Sodding</b>
<b>02931</b>	<b>Landscape and Tree Planting</b>
<b>02980</b>	<b>Pavement Repair</b>
<b>02981</b>	<b>Blast Cleaning of Pavement</b>

**DIVISION 3 – CONCRETE**

<b>03300</b>	<b>Cast-in-Place Concrete</b>
<b>03310</b>	<b>Structural Concrete</b>

NOTICE OF INTENT FOR AN AUTHORIZATION FOR STORMWATER DISCHARGES  
 ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER TPDES GENERAL  
 PERMIT TXR150000

337

END OF DOCUMENT

Document 00015  
List of Drawings

SHEET #	THROUGH	SHEET #	SHEET TITLE
1			TITLE SHEET
2			INDEX OF SHEETS
3	-	7	PROJECT LAYOUTS
8			CONTROL MONUMENT LAYOUT
9	-	10	TYPICAL SECTIONS
11	-	21	GENERAL NOTES
22	-	23	QUANTITY SUMMARY
24			SUMMARY OF SMALL SIGNS
25			TRAFFIC CONTROL PLAN PHASES NARRATIVE AND LAYOUTS
26			* TRAFFIC CONTROL PLAN ONE-WAY TWO-LANE ROADS TCP(1-2)-18
27			* TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS TCP(1-4)-18
28			* BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS BC(1)-14
29			* BARRICADE AND CONSTRUCTION PROJECT LIMIT BC(2)-14
30			* BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT BC(3)-14
31			* BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES BC(4)-14
32			* BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT BC(5)-14
33			* BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) BC(6)-14
34			* BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS, ATTENUATOR BC(7)-14
35	-	37	* BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES BC(8)-14 THROUGH BC(10)-14
38			* BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS BC(11)-14
39			* BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS BC(12)-14
40	-	45	HORIZONTAL ALIGNMENT DATA
46	-	62	PLAN AND PROFILES
63	-	65	* DRIVEWAY DETAILS DD (HOU DIST)
66	-	69	* PEDESTRIAN FACILITIES CURB RAMPS PED-18
70	-	71	* JOINTED REINFORCED CONCRETE PAVEMENT DETAILS JRCP (HOU DIST)
72			HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
73	-	74	CULVERT LAYOUT
75			INTERCEPTOR STRUCTURE DETAILS
76			* BOX CULVERT SUPPLEMENT- WINGS AND END TREATMENTS BCS
77			* EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL ECD
78			* CONCRETE WINGWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS FW-0
79			* CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2 PW
80			* SINGLE BOX CULVERTS PRECAST 6'-0" SPAN SCP-6
81			* BOX CULVERTS PRECAST MISCELLANEOUS DETAILS SCP-MD
82	-	83	* EXCAVATION AND BACKFILL DIAGRAMS E&BD (HOU DIST)
84	-	85	EXISTING UTILITIES
86	-	90	BORE LOGS

Document 00015  
List of Drawings

SHEET #	THROUGH	SHEET #	SHEET TITLE
91			HYDRAULIC DATA SHEET
92	-	93	BRIDGE LAYOUT PEDESTRIAN BRIDGE
94			BRIDGE QUANTITIES
95			BENT 2
96			ABUTMENT 1
97			ABUTMENT 3
98			ABUTMENT DETAILS
99			** CONCRETE RIPRAP AND SHOULDER DRAINS EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9) CRR
100	-	101	** COMMON FOUNDATION DETAILS FD
102			* SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS SMD(GEN)-08
103			* SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-1)-08
104			* SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-2)-08
105			* SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-3)-08
106			* SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL
107	-	111	STORMWATER POLLUTION PREVENTION PLAN
112			* TXDOT STORM WATER POLLUTION PREVENTION PLAN SWP3 (HOU DIST)
113			* ECL EROSION CONTROL LOG ECL-12 (HOU DIST)
114			* TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE AND VERTICAL TRACKING EC(1)-16
115			* TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC(2)-16
116			* TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES CONSTRUCTION EXITS EC(3)-16
117			* FERTILIZER, SEED, SOD, STRAW, COMPOST, AND WATER (HOU DIST)
118			* ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC
119			CURB RAMP LAYOUT PROVINCE VILLAGE DRIVE
120			SITE DIMENSION LAYOUT PEARLAND PARKWAY
121			GRADING AND DRAINAGE LAYOUT PEARLAND PARKWAY
122			OVERAL LANDSCAPE PLAN
123	-	124	LANDSCAPE LAYOUT
125	-	126	LANDSCAPE DETAILS
127			PLANTING DETAILS
128			IRRIGATION PLAN
129	-	130	IRRIGATION DETAILS
131	-	135	SIGNAGE DETAILS



### Section 00110-T

## LGPP ABBREVIATIONS AND DEFINITIONS SUPPLEMENT

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### 1. APPLICABILITY

Wherever the following terms are used in these specifications or other Contract documents, the intent and meaning will be interpreted as shown below.

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### 2. ABBREVIATIONS

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Inc.
AMRL	AASHTO Materials Reference Laboratory
ANLA	American Nursery and Landscape Association
ANSI	American National Standards Institute
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASBI	American Segmental Bridge Institute
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWC	American Wood Council
AWG	American Wire Gage
AWPA	American Wood Protection Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BMP	Best Management Practices
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
COE	U.S. Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
DBE	Disadvantaged Business Enterprise
DMS	Departmental Material Specification
EIA	Electronic Industries Alliance
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration, U.S. Department of Transportation
FSS	Federal Specifications and Standards (General Services Administration)
GSA	United States General Services Administration
HUB	Historically Underutilized Business

ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IMSA	International Municipal Signal Association
ISO	International Organization for Standardization
ITS	Intelligent Transportation System
ITE	Institute of Transportation Engineers
LG	Local Government
LGPP	Local Government Project Procedures
LRFD	Load and Resistance Factor Design
MASH	Manual for Assessing Safety Hardware
MPL	Material Producer List (TxDOT document)
NCHRP	National Cooperative Highway Research Program
NCR	Nonconformance Report (TxDOT form)
NEC	National Electrical Code (Published by NFPA)
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NRM	Nonhazardous Recyclable Material
NRMCA	National Ready Mixed Concrete Association
NSBA	National Steel Bridge Alliance
NTPEP	National Transportation Product Evaluation Program
OSHA	Occupational Safety & Health Administration, U.S. Department of Labor
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PE	Professional Engineer
PPI	Plastics Pipe Institute
PS&E	Plans, Specifications, and Estimates
PSL	Project-Specific Location
PTI	Post-Tension Institute
QA	Quality Assurance
QC	Quality Control
RCP	Reinforced Concrete Pipe
RPLS	Registered Public Land Surveyor
RRC	Railroad Commission of Texas
SBE	Small Business Enterprise
SFPA	Southern Forest Products Association
SI	International System of Units
SPIB	Southern Pine Inspection Bureau
SSPC	The Society for Protective Coatings
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDLR	Texas Department of Licensing and Regulation
TGC	Texas Government Code
TMUTCD	Texas Manual on Uniform Traffic Control Devices
TxDOT	Texas Department of Transportation
UL	Underwriters Laboratory, Inc.
USC	United States Code
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

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**3. DEFINITIONS**

- 3.1. **Abrasive Blasting.** Spraying blasts of pressurized air combined with abrasive media.
- 3.2. **Actual Cost.** Contractor's actual cost to provide labor, material, equipment, and project overhead necessary for the work.
- 3.3. **Addendum.** Change in bid documents developed between advertising and bid submittal deadline.
- 3.4. **Additive Alternate.** A bid item contained in the bid documents that is not a regular item or a replacement alternate bid item. The additive alternate items include work that may be added to the base bid work.
- 3.5. **Deductive Alternate.** A bid item contained in the bid documents that is not a regular item or a replacement alternate bid item. The deductive alternate items include work that may be deducted from the base bid work.
- 3.6. **Advertisement.** The public announcement required by law inviting bids for work to be performed or materials to be furnished.
- 3.7. **Affiliates.** Two or more firms are affiliated if they share common officers, directors, or stockholders; a family member of an officer, director, or stockholder of one firm serves in a similar capacity in another of the firms; an individual who has an interest in, or controls a part of, one firm either directly or indirectly also has an interest in, or controls a part of, another of the firms; the firms are so closely connected or associated that one of the firms, either directly or indirectly, controls or has the power to control another firm; one firm controls or has the power to control another of the firms; or the firms are closely allied through an established course of dealings, including, but not limited to, the lending of financial assistance.
- 3.8. **Air Blasting.** Spraying blasts of pressurized air free of oil and moisture.
- 3.9. **Air Temperature.** The temperature measured in degrees Fahrenheit (°F) in the shade, not in the direct rays of the sun, and away from artificial heat.
- 3.10. **Anticipated Profit.** Profit for work not performed.
- 3.11. **Apparent Low Bidder.** The Bidder determined to have the numerically lowest total bid as a result of the tabulation of bids by the Owner.
- 3.12. **Architect of Record.** A person registered as an architect or licensed as a landscape architect, in accordance with State law, exercising overall responsibility for the design or a significant portion of the design and performs certain Contract administration responsibilities as described in the Contract; or a firm employed by the Owner to provide professional architectural services.
- 3.13. **Arterial Highway.** A highway used primarily for through traffic and usually on a continuous route.
- 3.14. **Notice of Award.** The Owner's acceptance of a Contractor's bid for a proposed Contract that authorizes the Owner to enter into a Contract.
- 3.15. **Base Bid.** The total bid amount without additive alternates.

- 3.16. **Bid.** The offer from the Bidder for performing the work described in the bid documents, submitted on the prescribed bid form, considering addenda issued and giving unit bid prices for performing the work described in the bid documents.
- 3.17. **Bid Bond.** The security executed by the Contractor and the Surety furnished to the Owner to guarantee payment of liquidated damages if the Contractor fails to enter into an awarded Contract.
- 3.18. **Bid Documents.** The complete set of documents necessary for a Bidder to submit a bid. The documents may include plans, specifications, special specifications, special provisions, addenda, and the prescribed form a Bidder is to submit as the Bid. Other terms used may include general conditions, project manual, instructions to bidders, and construction specifications.
- 3.19. **Bid Error.** A mathematical mistake made by a Bidder in the unit price entered into the bid documents.
- 3.20. **Bid Form.** The portion of the bid documents that a prospective Bidder must submit to the Owner for their bid to be considered.
- 3.21. **Bidder.** An individual, partnership, limited liability company, corporation, or joint venture submitting a bid for a proposed Contract.
- 3.22. **Blast Cleaning.** Using one of the blasting methods, including, but not limited to, water blasting, low-pressure water blasting, high-pressure water blasting, abrasive blasting, water-abrasive blasting, shot blasting, slurry blasting, water injected abrasive blasting, and brush blasting.
- 3.23. **Bridge.** A structure, including supports, erected over a depression or an obstruction (e.g., water, a highway, or a railway) having a roadway or track for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 ft. between faces of abutments, spring lines of arches, or extreme ends of the openings for multiple box culverts.
- 3.24. **Brush Blasting.** Sweeping lightly with an abrasive blast to remove loose material.
- 3.25. **Building Contract.** A Contract entered under State law for the construction or maintenance of an Owner building or appurtenance facilities. Building Contracts are considered to be construction Contracts.
- 3.26. **Certificate of Insurance.** A form approved by the Owner covering insurance requirements stated in the Contract.
- 3.27. **Change Order.** Written order to the Contractor detailing changes to the specified work, item quantities or any other modification to the Contract.
- 3.28. **Concrete Construction Joint.** A joint formed by placing plastic concrete in direct contact with concrete that has attained its initial set.
- 3.29. **Concrete Repair Manual.** TxDOT manual specifying methods and procedures for concrete repair as an extension of the standard specifications.
- 3.30. **ConcreteWorks®.** TxDOT-owned software for concrete heat analysis. Software is available on the TxDOT's website.
- 3.31. **Construction Contract.** A Contract entered under State law for the construction, reconstruction, or maintenance of a segment of the Owner's transportation system.

- 3.32. **Consultant.** The licensed professional engineer or engineering firm, or the architect or architectural firm, registered in the State of Texas and under Contract to the Owner to perform professional services. The consultant may be the Engineer or architect of record or may provide services through and be subcontracted to the Engineer or architect of record.
- 3.33. **Contract.** The agreement between the Owner and the Contractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
- 3.34. **Contract Documents.** Elements of the Contract, including, but not limited to, the plans, specifications incorporated by reference, special provisions, special specifications, Contract bonds, change orders, addendums, and supplemental agreements.
- 3.35. **Contract Time.** The number of days specified for completion of the work, including authorized additional working days.
- 3.36. **Contractor.** The individual, partnership, limited liability company, corporation, or joint venture and all principals and representatives with which the Contract is made by the Owner.
- 3.37. **Controlled Access Highway.** Any highway to or from which access is denied or controlled, in whole or in part, from or to abutting land or intersecting streets, roads, highways, alleys, or other public or private ways.
- 3.38. **Control of Access.** The condition in which the right to access of owners or occupants of abutting land or other persons in connection with a highway is fully or partially controlled by public authority.
- 3.39. **Control Point.** An established point shown on the plans to provide vertical and horizontal references for geometric control for construction.
- 3.40. **Cross-Sections.** Graphic representations of the original ground and the proposed facility, at right angles to the centerline or base line.
- 3.41. **Culvert.** Any buried structure providing an opening under a roadway for drainage or other purposes. Culverts may also be classified as bridges. (See Section 1.3.23., "Bridge.")
- 3.42. **Cycle.** The activity necessary for performing the specified work within the right of way project limits once.
- 3.43. **Daily Road-User Cost.** Damages based on the estimated daily cost of inconvenience to the traveling public resulting from the work.
- 3.44. **Date of Written Authorization.** Date of the written Notice to Proceed authorizing the Contractor to begin work.
- 3.45. **Debar (Debarment).** Action taken by the Owner, State, or federal government pursuant to regulation that prohibits a person or company from entering into a Contract, or from participating as a subcontractor, or supplier of materials or equipment used in a highway improvement Contract as defined in local, state, or federal law.
- 3.46. **Detour.** A temporary traffic route around a closed portion of a road.

- 3.47. **Department.** When used in the context of the party with whom the Contractor has a Construction Contract, Department refers to Owner. When used in other contexts such as technical specifications, refers to the Texas Department of Transportation.
- 3.48. **Departmental Material Specifications.** Reference specifications for various materials published by TxDOT's Construction Division with a DMS-XXXXX numbering system.
- 3.49. **Direct Traffic Culvert.** Concrete box culvert whose top slab is used as the final riding surface or is to have an overlay or other riding surface treatment.
- 3.50. **Disadvantaged Business Enterprise.** A small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which is at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.
- 3.51. **Divided Highway.** A highway with separate roadways intended to move traffic in opposite directions.
- 3.52. **Easement.** A real property right acquired by one party to use land belonging to another party for a specified purpose.
- 3.53. **Engineer.** The Professional Engineer licensed in Texas who represents the interests of the Owner.
- 3.54. **Entity.** Political subdivision for which the project is designed and constructed. Either a Municipality (City) or a County or other entity organized under the authority of State of Texas statutes. May also be referred to as an **Owner**.
- 3.55. **Expressway.** A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections.
- 3.56. **Family Member.** A family member of an individual is the individual's parent, parent's spouse, step-parent, step-parent's spouse, sibling, sibling's spouse, spouse, child, child's spouse, spouse's child, spouse's child's spouse, grandchild, grandparent, uncle, uncle's spouse, aunt, aunt's spouse, first cousin, or first cousin's spouse.
- 3.57. **Force Account.** Payment for directed work based on the actual cost of labor, equipment, and materials furnished with markups for project overhead and profit.
- 3.58. **Freeway.** An expressway with full control of access.
- 3.59. **Frontage Road.** A local street or road auxiliary to and located along an arterial highway for service to abutting property and adjacent areas and for control of access (sometimes known as a service road, access road, or insulator road).
- 3.60. **Hazardous Materials or Waste.** Hazardous materials or waste include, but are not limited to, explosives, compressed gas, flammable liquids, flammable solids, combustible liquids, oxidizers, poisons, radioactive materials, corrosives, etiologic agents, and other material classified as hazardous by 40 CFR 261, or applicable state and federal regulations.
- 3.61. **High-Pressure Water Blasting.** Water blasting with pressures between 5,000 and 10,000 psi.

- 3.62. **Highway, Street, or Road.** General terms denoting a public way for purposes of vehicular travel, including the entire area within the right of way. Recommended usage in urban areas is highway or street; in rural areas, highway or road.
- 3.63. **Historically Underutilized Business.** A corporation, sole proprietorship, partnership, or joint venture formed for the purpose of making a profit certified by the Texas Comptroller of Public Accounts, and 51% owned by one or more persons who are economically disadvantaged because of their identification as members of certain groups, including African Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, or women, and have a proportionate interest and demonstrate active participation in the control, operation, and management of the business' affairs. Individuals meeting the HUB definition are required to be residents of the State of Texas. Businesses that do not have their primary headquarters in the State of Texas are not eligible for HUB certification.
- 3.64. **Incentive/Disincentive Provisions.** An adjustment to the Contract price of a predetermined amount for each day the work is completed ahead of or behind the specified milestone, phase, or Contract completion dates. The amount of the incentive/disincentive is determined based on estimated costs for engineering, traffic control, delays to the motorists, and other items involved in the Contract.
- 3.65. **Independent Assurance Tests.** Tests used to evaluate the sampling and testing techniques and equipment used in the acceptance program. The tests are performed by the Owner or the Owner's representative and are not used for acceptance purposes.
- 3.66. **Inspector.** The person assigned by the Owner to inspect any or all parts of the work and the materials used for compliance with the Contract.
- 3.67. **Intelligent Transportation System.** An integrated system that uses video and other electronic detection devices to monitor traffic flows.
- 3.68. **Intersection.** The general area where 2 or more highways, streets, or roads join or cross, including the roadway and roadside facilities for traffic movements within it.
- 3.69. **Island.** An area within a roadway from which vehicular traffic is intended to be excluded, together with any area at the approach occupied by protective deflecting or warning devices.
- 3.70. **Joint Venture.** Any combination of individuals, partnerships, limited liability companies, or corporations submitting a single bid form.
- 3.71. **Lane Rental.** A method to assess the Contractor daily or hourly rental fees for each lane, shoulder, or combination of lanes and shoulders taken out of service.
- 3.72. **Letting.** The receipt, opening, tabulation, and determination of the apparent low Bidder.
- 3.73. **Licensed Professional Engineer.** A person who has been duly licensed by the Texas Board of Professional Engineers to engage in the practice of engineering in the State of Texas; also referred to as a Professional Engineer.
- 3.74. **Limits of Construction.** An area with established boundaries, identified within the highway right of way and easements, where the Contractor is permitted to perform the work.
- 3.75. **Local Street or Road.** A street or road primarily for access to residence, business, or other abutting property.

- 3.76. **Low-Pressure Water Blasting.** Water blasting with pressures between 3,000 and 5,000 psi.
- 3.77. **Major Item.** An item of work included in the Contract that has a total cost equal to or greater than 5% of the original Contract or \$100,000 whichever is less. A major item at the time of bid will remain a major item. An item not originally a major item does not become one through the course of the Contract.
- 3.78. **Material Producer List.** TxDOT-maintained list of approved products. Referenced as “Department’s MPL”.
- 3.79. **Materially Unbalanced Bid.** A bid that generates a reasonable doubt that award to the Bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the Owner.
- 3.80. **Mathematically Unbalanced Bid.** A bid containing bid prices that do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder’s anticipated profit, overhead costs, and other indirect costs.
- 3.81. **Median.** The portion of a divided highway separating the traffic lanes in opposite directions.
- 3.82. **Milestone Date.** The date that a specific portion of the work is to be completed, before the completion date for all work under the Contract.
- 3.83. **Monolithic Concrete Placement.** The placement of plastic concrete in such manner and sequence to prevent a construction joint.
- 3.84. **National Holidays.** January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, and December 24 or December 25.
- 3.85. **Nonhazardous Recyclable Material.** A material recovered or diverted from the nonhazardous waste stream for the purposes of reuse or recycling in the manufacture of products that may otherwise be produced using raw or virgin materials.
- 3.86. **Nonresident Bidder.** A Bidder whose principal place of business is not in Texas. This includes a Bidder whose ultimate parent company or majority owner does not have its principal place of business in Texas.
- 3.87. **Nonresponsive Bid.** A bid that does not meet the criteria for acceptance contained in the bid documents.
- 3.88. **Non-Site-Specific Contracts.** Contracts in which a geographic region is specified for the work and for which work orders, with or without plans, further detail the limits and work to be performed.
- 3.89. **Notice to Proceed,** Written notification to the Contractor authorizing work to begin.
- 3.90. **Notification.** Either written or oral instruction to the Contractor concerning the work. Voice mail is oral notification.
- 3.91. **Owner,** Political subdivision for whom the project is designed and constructed. Either a Municipality (City), a County or other entity organized under the authority of State of Texas statutes. May also be referred to as an **Entity**.
- 3.92. **Pavement.** That part of the roadway having a constructed surface for the use of vehicular traffic.



- 3.93.       **Pavement Structure.** Combination of surface course and base course placed on a subgrade to support the traffic load and distribute it to the roadbed.
- 3.93.1.     **Surface Course.** Pavement structure layers designed to accommodate the traffic load. The top layer resists skidding, traffic abrasion, and the disintegrating effects of climate and is sometimes called the wearing course.
- 3.93.2.     **Base Course.** One or more layers of specified material thickness placed on a subgrade to support a surface course.
- 3.93.3.     **Subgrade.** The top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed.
- 3.93.4.     **Subgrade Treatment.** Modifying or stabilizing material in the subgrade.
- 3.94.       **Payment Bond.** The security executed by the Contractor and the Surety, furnished to the Owner to guarantee payment of all legal debts of the Contractor pertaining to the Contract.
- 3.95.       **Performance Bond.** The security executed by the Contractor and the Surety, furnished to the Owner to guarantee the completion of the work in accordance with the terms of the Contract.
- 3.96.       **Plans.** The approved drawings, including true reproductions of the drawings that show the location, character, dimensions, and details of the work and are a part of the Contract.
- 3.97.       **Power of Attorney for Surety Bonds.** An instrument under corporate seal appointing an attorney-in-fact to act on behalf of a Surety in signing bonds.
- 3.98.       **Qualification.** The process for determining a Contractor's eligibility to be awarded a construction contract
- 3.99.       **Qualification.** The process for determining a Contractor's eligibility to bid work.
- 3.100.      **Qualification Statement.** The forms on which required information is furnished concerning the Contractor's ability to perform and finance the work.
- 3.101.      **Prequalified Contractor.** A contractor that is approved to bid on TxDOT contracts by satisfying their Prequalification Process.
- 3.102.      **Post Qualification.** The owner will determine if contractors are qualified to bid on the project after bids are open. The bid documents will identify the minimum requirements that contractor must meet to be qualified for the project. Unqualified contractors' bids will be considered non-responsive and not accepted.
- 3.103.      **Project-Specific Location.** A material source, plant, waste site, parking area, storage area, field office, staging area, haul road, or other similar location either outside the project limits or within the project limits but not specifically addressed in the Contract.
- 3.104.      **Proposal Guaranty.** The security furnished by the Bidder as a guarantee that the Bidder will enter into a Contract if awarded the work.
- 3.105.      **Purchasing Officer.** The Owner representative empowered by the Owner to officially receive bids and close the receipt of bids at a letting.

- 3.106. **Quality Assurance.** Sampling, testing, inspection, and other activities conducted by the Engineer to determine payment and make acceptance decisions.
- 3.107. **Quality Control.** Sampling, testing, and other process control activities conducted by the Contractor to monitor production and placement operations.
- 3.108. **Ramp.** A section of highway for the primary purpose of making connections with other highways.
- 3.109. **Referee Tests.** Tests requested to resolve differences between Contractor and Owner test results. The referee laboratory is the Owners .
- 3.110. **Regular Item.** A bid item contained in the bid documents and not designated as an additive alternate or replacement alternate bid item.
- 3.111. **Rental Rate Blue Book for Construction Equipment.** Publication containing equipment rental rates.
- 3.112. **Replacement Alternate.** A bid item identified on the bid documents that a Bidder may substitute for a specific regular item of work.
- 3.113. **Responsive Bid.** A bid that meets all requirements of the advertisement and the bid documents for acceptance.
- 3.114. **Right of Way.** A general term denoting land or property devoted to transportation purposes.
- 3.115. **Roadbed.** The graded portion of a highway prepared as foundation for the pavement structure and shoulders. On divided highways, the depressed median type and the raised median type highways are considered to have 2 roadbeds. Highways with a flush median are considered to have 1 roadbed. Frontage roads are considered separate roadbeds.
- 3.116. **Road Master.** A railroad maintenance official in charge of a division of railway.
- 3.117. **Roadside.** The areas between the outside edges of the shoulders and the right of way boundaries. Unpaved median areas between inside shoulders of divided highways and areas within interchanges are included.
- 3.118. **Roadway.** The portion of the highway (including shoulders) used by the traveling public.
- 3.119. **Sandblasting, Dry.** Spraying blasts of pressurized air combined with sand.
- 3.120. **Sandblasting, Wet.** Spraying blasts of pressurized water combined with sand.
- 3.121. **Shoulder.** That portion of the roadway contiguous with the traffic lanes for accommodation of stopped vehicles for emergency use or for lateral support of base and surface courses.
- 3.122. **Shot Blasting.** Spraying blasts of pressurized air combined with metal shot.
- 3.123. **Sidewalk.** Portion of the right of way constructed exclusively for pedestrian use.
- 3.124. **Slurry Blasting.** Spraying blasts of pressurized air combined with a mixture of water and abrasive media.
- 3.125. **Special Provisions.** Additions or revisions to these standard specifications or special specifications.

- 3.126. **Special Specifications.** Supplemental specifications applicable to the Contract not covered by these standard specifications.
- 3.127. **Specifications.** Directives or requirements issued or made pertaining to the method and manner of performing the work or to quantities and qualities of materials to be furnished under the Contract. References to DMSS, ASTM or AASHTO specifications, or TxDOT bulletins and manuals, imply the latest standard or tentative standard in effect on the date of the bid. The Owner will consider incorporation of subsequent changes to these documents in accordance with Item 4L, "Scope of Work."
- 3.128. **Small Business Enterprise.** A firm (including affiliates) whose annual gross receipts do not exceed the U.S. Small Business Administration's size standards for 4 consecutive years.
- 3.129. **State.** The State of Texas.
- 3.130. **State Holiday.** A holiday authorized by the State Legislature excluding optional state holidays and not listed in Section 1.3.85., "National Holidays." A list of state holidays can be found on the TxDOT's website.
- 3.131. **Station.** A unit of measurement consisting of 100 horizontal feet.
- 3.132. **Subcontract.** The agreement between the Contractor and subcontractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
- 3.133. **Subcontractor.** An individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets, or proposes to sublet, any portion of a Contract, excluding a material supplier, a hauling firm hauling only from a commercial source to the project, truck owner-operator, wholly-owned subsidiary, or specialty-type businesses such as security companies and rental companies.
- 3.134. **Subsidiary.** Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate item and are included within the items on which they necessarily depend.
- 3.135. **Substructure.** The part of the structure below the bridge seats, but not including bearings, drilled shafts, or piling. Parapets, back walls, wing walls of the abutments, and drainage structures are considered parts of the substructure.
- 3.136. **Superintendent.** The representative of the Contractor who is available at all times and able to receive instructions from the Owner or authorized Owner representatives and to act for the Contractor.
- 3.137. **Superstructure.** The part of the structure above the bridge seats or above the springing lines of arches and including the bearings. Flatwork construction may be considered superstructure.
- 3.138. **Supplemental Agreement.** Written agreement entered into between the Contractor and the Owner and approved by the Surety, covering alterations and changes in the Contract. A supplemental agreement is used by the Owner whenever the modifications include assignment of the Contract from one party to another or other cases as desired by the Owner.
- 3.139. **Surety.** The corporate body or bodies authorized to do business in Texas bound with and for the Contractor for the faithful performance of the work covered by the Contract and for the payment for all labor and material supplied in the prosecution of the work.

- 3.140. **Surplus Materials.** Any debris or material related to the Contract but not incorporated into the work.
- 3.141. **Suspension.** Action taken by the Owner, State, or federal government pursuant to regulation that prohibits a person or company from entering into a Contract, or from participating as a subcontractor, or supplier of materials or equipment used in a contract
- 3.142. **Tex –XXX-X.** TxDOT material test methods found on TxDOT’s Construction Division Web Site.
- 3.143. **Traffic Lane.** The strip of roadway intended to accommodate the forward movement of a single line of vehicles.
- 3.144. **Traveled Way.** The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.
- 3.145. **Truck Owner-Operator.** An individual who owns and operates 1 truck for hire.
- 3.146. **UT-Bridge.** TxDOT-owned software for steel girder erection. Software is available on TxDOT’s website.
- 3.147. **UT-Lift.** TxDOT-owned software for steel girder erection. Software is available on TxDOT’s website.
- 3.148. **Utility.** Privately, publicly, or cooperatively owned lines, facilities, and systems for producing, transmitting, or distributing communications, power, heat, gas, oil, water, waste, or storm water that are not connected with the highway drainage, signal systems, or other products that directly or indirectly serve the public; the utility company.
- 3.149. **Verification Tests.** Tests used to verify accuracy of QC and QA and mixture design testing.
- 3.150. **Water-Abrasive Blasting.** Spraying blasts of pressurized water combined with abrasive media.
- 3.151. **Water Blasting.** Spraying blasts of pressurized water of at least 3,000 psi.
- 3.152. **Water-Injected Abrasive Blasting.** Abrasive blasting with water injected into the abrasive/air stream at the nozzle.
- 3.153. **Wholly-Owned Subsidiary.** A legal entity owned entirely by the Contractor or subcontractor.
- 3.154. **Work.** The furnishing of all labor, materials, equipment, and other incidentals necessary for the successful completion of the Contract.
- 3.155. **Written Notice.** Written notice is considered to have been duly given if delivered in person to the individual or member to whom it is intended or if sent by regular, registered, or certified mail and delivered to the last known business address; sent by facsimile to the last known phone number; or sent by e-mail to the last known address. The date of the letter will serve as the beginning day of notice. Unclaimed mail or failure to provide current mailing address will not be considered a failure to provide written notice.

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## Special Specification 1002

### Landscape Amenity

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#### 1. DESCRIPTION

Install landscape amenity as shown on the plans or as directed.

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#### 2. MATERIALS

Furnish materials and use construction methods in accordance with the plans.

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#### 3. CONSTRUCTION

Use construction methods in accordance with the plans.

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#### 4. MEASUREMENT

This Item will be measured by the each.

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#### 5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Landscape Amenity" or "Landscape Amenity" of type specified. This price is full compensation for furnishing all materials, equipment, labor, and incidentals.

**SECTION 02916****SOIL TREATMENT****1.0 GENERAL****1.1 SUMMARY**

- A. Related Sections:
  - 1. Planting - Section 02931
  - 2. Exterior Landscape Maintenance - Section 02940
  - 3. Hydromulching - Section 02921
  - 4. Sodding - Section 02922

**1.2 SCOPE**

- A. Work included: Include the following work in addition to items normally part of this Section
  - 1. Provide Soil Treatment in designated planting and areas to successfully complete the Work as specified.
  - 2. This section specifies the requirements for providing and applying Liquid Biological Amendments (LBA), including Liquid Compost Extract (LCE) and related bio-stimulants to various types of soils and plants found on this Project to include Bio-Augmentation: the adding of life/soil biology to the soil and Bio-Stimulation: the feeding of that biology in the form they can ingest: SGTX Seed Power, mycorrhizal fungi and other nutrients added to seed via hydromulch or below sod prior to sod installed; SGTX Tree Injections, mycorrhizal fungi and other nutrients added to roots of trees after planting.
- B. The work of this Section includes coordination with the Work specified in other Sections.

**1.3 QUALITY ASSURANCE**

- A. Regulatory Requirements: Formulate and apply materials in conformance with applicable codes and regulations.
- B. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for five (5) years. Use experienced applicator.
- C. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- D. Substitutions of materials specified will not be permitted unless authorized in writing by Landscape Architect and/or Owner's Representative.
- E. Use of Synthetic Fertilizer, Insecticides and Herbicides: None permitted without written approval from Landscape Architect and Owner's Representative.
- F. Liquid Biological Amendment Contractor Qualifications:
  - 1. Provider and Application Contractor shall have 6 years previous experience in successfully implementing and installation of this scope and scale for at least five (5)

years in the Greater Houston Region.

2. In the Houston Area: Contractor shall be an active member in good standing of the Organic Horticulture Business-Education Alliance (OHBA).
3. The contractor must have a minimum of 6 years' experience with chemical-free installations and maintenance. Job references for projects that have integrated Sustainable Growth Texas products shall substantiate this experience. Evidence of long term performance consisting of performance statement letters or personnel for contact shall be furnished upon request.
4. Shall be Sustainable Growth Texas, LLC 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 or approved equal.

G. Product Quality:

1. Liquid Compost Extract (LCE) must be verified with time and date as having been
2. freshly made within five (5) hours of application, and from compost meeting the specification in this Section.
3. The Liquid Compost Extract (LCE) or compost shall not have an 'off', ammonium, sulfuric or anaerobic smell.
4. Additional amendments required by specific site conditions shall be added to the base Liquid Compost Extract (LCE) mixture at the time of the application.
5. Compost used to make Liquid Compost Extract (LCE) must have microbial content quantitatively verified on a quarterly basis through an analytical laboratory that employs soil food web analysis methods.
6. Copies of quarterly Quantitative Soil Food Web Lab test of compost used are to be kept at contractor office and made available to the Landscape Architect and/or Owner's Representative upon request within eight (8) hours of written, email or otherwise notification.
7. Water: Shall be clean potable water, free of contaminants that would harm the components of the products, especially chloramines.
8. Seeds provided to the project shall to be fungicide free. Refer to Hydromulching Section 02921.
9. Use of Synthetic Fertilizer, Insecticides and Herbicides: None permitted without written approval from Landscape Architect and Owner's Representative.

#### **1.4 SUBMITTALS**

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
- B. Warranty: Submit manufacturers standard warranty. Include labor and materials to repair or replace defective materials.
- C. After site examination and during site analysis, provide a list of Liquid Biological Amendments (LBA) material and submit for approval a recommendation and Application Sequence Schedule for precise combination of compost extract and additives best suited to project conditions seven (7) days prior to first application. Refer to Part 3- Execution of this specification.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

**SPECIAL SPECIFICATION**

Project No. PK 1402

**SOIL TREATMENT**

- A. All material shall be handled and transported in such a way as to maintain the full intended quality and effectiveness of the product.
- B. Liquid Compost Extract (LCE) must be circulated for five (5) minutes per five hundred (500) gallons of material every three (3) hours after manufactured.
- C. All solutions must be applied within forty-eight (48) hours of manufacture and five (5) hours after additives/bio-stimulants are mixed and added.
- D. If the Landscape Architect has cause for concern for the quality of the product, he/she may require testing to verify job-site quality of the product at the Owners expense.

**2.0 PRODUCTS****2.1 MATERIALS**

- A. Compost: Compost used to make Liquid Compost Extract (LCE) must meet the following soil food web minimum standards (per gram dry weight of compost) as tested quarterly.
  - 1. 15–25 micrograms of Active Bacterial biomass,
  - 2. 100–300 micrograms of Total Bacterial biomass,
  - 3. 15–25 micrograms of Active Fungal biomass,
  - 4. 100–300 micrograms of Total Fungal biomass,
  - 5. 5,000 total Flagellates and Amoebae, and Less than 100 Ciliates, and 2 to 20 Beneficial Nematodes.
  - 6. Total Fungi: Total Bacteria to be a 1:1 ratio with no more than a 20% deviation
- B. Compost must meet the Solvita compost Maturity test of 6.0 or higher.
- C. Liquid Compost Extract (LCE) shall be an extracted solution from compost and mixed with a combination of innoculms, stimulants, and additives which may be used but which are not limited to the following or as shown in 3.4 Typical Blends of this Section:
  - 1. Mycorrhizal fungi: an Endo/Ecto blended inoculum sourced with a minimum potency of 100,000 propagules per pound and be appropriate species for the plants.
  - 2. Fulvic acid: a natural source of fulvic acid.
  - 3. Non-sulfured molasses, a naturally derived, non-GMO source measuring 79.5° Brix or greater that contains no mold inhibitors.
  - 4. Fish hydrosylate: a cold processed, enzymatically-digested hydrolyzed liquid or dry fish fertilizer.
  - 5. Humate: a low sodium, mined and un-treated source of oxidized lignite containing 70% humic acid that can be mixed into suspension containing 12% humic acid by weight.
  - 6. Soluble kelp powder: a dehydrated liquid extract made from the *Ascophyllum nodosum* seaweed.
  - 7. Micronized rock dust: a mined and crushed source of finely ground rock powder containing secondary, trace, and rare earth minerals.
- D. SGTX Hydro-Slurry Mix™ to be added with seeding by hydromulching proprietary blend by © Sustainable Growth Texas, LLC 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 (SGTX):
  - 1. Apply 1 lb per 1,000 gallons of hydro-seed. Blend can also be mixed with seed and



SPECIAL SPECIFICATION

Project No. PK 1402

SOIL TREATMENT

broadcasted, then watered. When using native seeds, apply SGTX Slurry Mix first, and then plant as usual.

- E. Dry Fertilizer:
  - 1. When dry fertilizer is needed, selection shall be from San Jacinto Environmental Supply, or approved equal. Must be derived from natural sources and be biologically consumable.
- F. Insecticide:
  - 1. No harsh insecticide shall be applied on this site without written approval by the Landscape Architect and/or Owner's Representative other than those containing the active ingredient of Spinosad unless near water or plants with pollinators. In that case, use Eco-Smart Liquids or granules.
  - 2. Liquid Spinosad at recommended rates or dry bait containing Spinosad. (see above if near bodies of water.)
- G. Liquid Biological Amendments (LBA) and soil treatment:
  - 1. By © Sustainable Growth Texas, LLC 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 (SGTX)
- H. Notify Landscape Architect and Owner's Representative seven (7) days before any application.
- I. Materials will be supplied by the following, or an approved equal, meeting all of the requirements of this specification: Sustainable Growth Texas, LLC 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711

**2.2 EQUIPMENT REQUIREMENTS:**

- A. Application Spray tank shall be rinsed clean on a daily basis and disinfected on a bi-weekly basis. Tank shall be rinsed with non-chlorinated water, de-chlorinated water, non-chloramines treated water, or de-chloraminated water before filling with Liquid Compost Extract (LCE).
- B. Application Spray tank shall be equipped with an operating circulation pump of a diaphragm or centrifugal design capable of low velocity, high volume delivery.
- C. Application spray tank must be equipped with fully functioning and operating and agitation, and circulation system. Aeration systems may be necessary for some applications.
- D. All equipment used for application of Liquid Compost Extract (LCE)/bio-spray mix must not be used for storage or application of synthetic herbicides, insecticides, or fungicides.
- E. Injectors must be capable of penetrating four (4) inches into soil and/or root balls. They must be unfiltered, open flow, not less than 1/4" restriction along any part of the injection system.
- F. Extractors used to produce the Liquid Compost Extract (LCE) are not to be simple brewing compost tea machines. They must be capable of pulling the microbes off the compost in their active and inactive forms. Landscape Architect may inspect the extraction equipment prior to allowing work to be performed.

- G. Approved vendors for Liquid Compost Extract (LCE): Soils Alive – all Locations (512-636-3711); Sustainable Growth Texas, LLC (512-636-3711); Sustainable Growth Houston, LLC or equal.

### **3.0 EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine the area where work is to be executed and notify the Landscape Architect and/or Owner's Representative in writing of deficiencies of work in place by others resulting in unsatisfactory site conditions for application
- B. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.2 ANALYSIS AND RECOMMENDATION**

- A. Provide a list of Liquid Biological Amendments (LBA) material and submit for approval a recommendation and application sequence schedule for precise combination of compost extract and additives best suited to project conditions seven (7) days prior to first application

#### **3.3 APPLICATION REQUIREMENTS**

- A. Soil treatment materials shall be supplied and applied by Sustainable Growth Texas, LLC 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 or approved equal.
- B. Project Areas:
  - 1. Establishment of Bermuda and other indicated lawn species.
  - 2. Native Plant reestablishment at lawn periphery.
- C. Application Sequence, Rates of Liquid Biological Amendments (LBA)/ Liquid Compost Extract (LCE) for Erosion Control during Construction/Establishment of turf:
  - 1. Pre-Planting. 1st application: SGTX dry mineral mix or approved equal applied at rough or finished grade. Rate: 50 lbs per acre.
  - 2. Pre-Planting. 2nd application: The SGTX Bio-Augmentation Mix <sup>TM</sup> applied at either rough or finished grade. 400 gallons Liquid Compost Extract (LCE) per acre. Wait at least fourteen (14) days before planting after this application. If compost is recommended to be added to the existing topsoil, incorporate into top 2" of soils during finish grade. Then apply 2nd application if not already applied at rough or finished grade. Wait at least fourteen (14) days before planting after this application.
  - 3. Seeding. 3rd application: The SGTX Hydro-Slurry Mix <sup>TM</sup> applied with turf hydromulch and also in beds when planted. Rate: 43 lbs per acre.
  - 4. First True Leaf. 4th application: The SGTX Bio-Stimulation Mix <sup>TM</sup> applied after true leaf is 1" tall. Rate: 200 gallons Liquid Compost Extract (LCE) per acre.
  - 5. 30 Days later. 5th application: SGTX Bio-Augmentation Mix <sup>TM</sup> applied 30-40 days after 4th application. Rate: 200 gallons Liquid Compost Extract (LCE) per acre.
  - 6. 30-60 Days later. 6th application: Dry fertilizer mix or liquid application with high Nitrogen component. Rate determined by analysis and recommendation.

7. Problem Areas: As determined and recommended by SGTX, spot spray after 3rd, 4th and 5th applications with Bio-Stimulation mix. Rate: 50 gallons per acre.
  8. 7th Application: As determined and recommended by SGTX, tree injections. Appropriate material and rate to be recommended by SGTX.
- D. Maintenance for 120 days following the application sequence are as follows:
- E. Maintenance for the 1-year maintenance period following final acceptance is as follows:
1. Apply solution with equipment and methods so that solution is distributed evenly across the soil surface and/or plants at the specified application rates.
  2. See Exterior Landscape Maintenance (See Specification 09100) for application rates and type of treatment determined by month.
- F. Cleanup: Liquid Biological Amendments (LBA) Contractor shall clean site as required and repair any damage to improvements or surrounding surfaces.
- G. Cultural Practices that enhance the biological growing system regarding watering amounts, mowing sequence and heights must be coordinated.

### 3.4 TYPICAL BLENDS

- A. Bio-Augmentation Mix <sup>TM</sup> for Bermuda or Buffalograss.
- B. Method: Apply foliar spray to turf grasses, ornamental grasses and shrubs and associated bed preparation area. Apply three hundred (300) gallons per acre of foliar application of liquid biological amendment with additives at the following rates:
1. Liquid Compost Extract (LCE): five hundred (500) gallons
  2. Humate: Three (3) lbs per five hundred (500) gallons
  3. Fulvic acid: Two (2) oz per five hundred (500) gallons
  4. Soluble kelp seaweed: Five (5) lb per five hundred (500) gallons
  5. Unsulphured molasses: Sixty-four (64) oz per five hundred (500) gallons
  6. Fish hydrolysate: Two (2) gallons of liquid or fifteen (15) lbs of dry per five hundred (500) gallons

### 4.0 MEASUREMENT AND PAYMENT

#### 4.1 UNITS

- A. Measurement and Payment for Soil Treatment is included in other sections.

**END OF SECTION**

**SECTION 02921 S****HYDROMULCH SEEDING**

*The following supplement modifies specification Section 02921 – Hydromulch Seeding Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.*

## 1.1 GENERAL

## 1.2 SECTION INCLUDES

**Aa Contractor is responsible for coordinating all hydromulching and related work with other trades and aspects of work as necessary to satisfactorily complete the requirements of this specification.**

**B References to Technical Specifications:**

1. Section 01200 – Measurement and Payment Procedures
2. Section 01350 – Submittals
3. Section 01500 – Temporary Facilities and Controls
4. Section 02910 – Topsoil
5. Section 02255 – Bedding, Backfill, and Embankment Materials
6. Section 01140 – Contractor's Use of Premises
7. **Section 02916 – Soil Treatment**
8. **Section 02940 – Exterior Landscape Maintenance**

## 1.3 MEASUREMENT AND PAYMENT

**Ba Payment Schedule for 'Hydromulching' of the type specified will be handled in the following manner:**

1. **When the Hydromulching, fine grading and installation of related materials are completed and turf root depth is twice the blade height in random samples taken by the Landscape Architect, 50% payment of the unit bid price will be approved.**
2. **Turf is considered established when it sustains 90% acceptable vegetative cover with no bare areas in excess of twelve (12") inches diameter. At this point the remainder of the unit bid price, less retainage, will be approved.**

**Ca No payment will be made for hydromulch seeding if the inspections per this specification are not approved by the Landscape Architect/Owner's Representative.**

## 1.03 SUBMITTALS

- C **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Section 02916) for Soil Treatment.**

## 1.5 QUALITY ASSURANCE

- A. **Reference Standards and Governing Agencies: The following documents and agencies govern the work except where more restrictive requirements are specified.**
1. All local, municipal and state laws, and rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations and requirements of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, these specifications and drawings shall take precedence.
  2. The most recent edition published edition of the ANSI: American National Standards Institute, 260.1: Nursery Stock.
  3. Standardized Plant Names, 1942 Edition, American Joint Committee on Horticultural Nomenclature.
  4. Occupational and Safety Health Administration (OSHA): General Industry (29 CFR 1910), Construction Industry (29 CFR 1926), OSHA Pamphlet 3861, OSHA Publication 3752.
- B. **Field Supervision: Require Contractor to maintain an experienced full-time supervisor on Project site when work is in progress.**
- C. **Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.**
- D. **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Section 02916) for Soil Treatment.**
- E. **All soil treatment and pest control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512- 636-3711 (SGTX) or approved equal.**
- F. **Inspections:**
1. Weekly meetings will be held through construction with the Landscape Architect, Owner's Representative and Contractor. During these weekly meetings the species of turfgrass will be determined, coverage of areas reviewed and inspections conducted with the Contractor.

2. Surfaces indicated to be hydromulched shall be inspected to verify that all preparatory work in the area has been completed. Hydromulching shall not start until all preparatory work has been completed.
3. **Materials Inspection.** The day of hydromulching, Landscape Contractor shall provide hydromulch machine, water, labor, unopened seed container in original manufacturers container and fiber material. SGTX personnel shall provide hydroslurry mix. The Landscape Architect shall inspect and observe the seed mix in the original container(s) and SGTX hydro-slurry mix prior to pouring into tank and application. The inspection and tank materials must meet the requirements for material outlined in Soil Treatment (See Section 02916). Any application of material without this inspection will result in a failed materials test, no measurement or payment will be applied for applied material and reapplication will be required. Contractor must submit written requests for inspections to the Landscape Architect and/or Owner's Representative at least seven (7) days prior to anticipated inspection date.
4. No sections or portions of the landscape area will be accepted until all sections, areas or portions are completed, installed and approved in writing by the Landscape Architect and/or Owner's Representative. Any sunk or eroded areas or any plants or materials deficient, dead or dying or exhibiting lack of healthy growth shall be reinstalled with thirty (30) days of Inspection
5. Submit written requests for inspections to the Landscape Architect and Owner's Representative at least seven (7) days prior to anticipated inspection date.

**G. Contractor shall:**

1. The landscape contractor must have a minimum of 6 years' experience with chemical-free installations and maintenance. Job references for projects that have integrated Sustainable Growth Texas products shall substantiate this experience. Evidence of long term performance consisting of performance statement letters or personnel for contact shall be furnished upon request.

## 2.0 PRODUCTS

### 2.01 MATERIALS

- C Seed:** Conform to U.S. Department of Agriculture rules and regulations of the Federal Seed Act and the Texas Seed Law. **The seed shall be harvested within 1 year prior to planting, free of Johnson grass, field bind weed, dodder seed, and free of other weed seed to the limits allowable under the Federal Seed Act and applicable seed laws. The seed shall be extra fancy grade, treated with fungicide, and shall have a germination and purity that will produce, after allowance for Federal Seed Act tolerances, a pure live seed content of not less than 85 percent, using the formula: purity percent times (germination percent times plus hard or sound seed percent).** Seed shall be labeled in accordance with U.S. Department of Agriculture rules and regulations.

1. **Rye grass will not be accepted without written authorization and stipulations from the Landscape Architect /Owner's Representative.**
  2. Bermuda: common Bermuda (Cynodon dactylon). Deliver in original, unopened container showing weight, analysis, name of vender, and germination test results.
    - a. **Certification of grass seed shall be:**
      - i. **Certified Bermuda Seed, 98% pure Bermuda seed minimum requirement.**
      - ii. **Approved by Landscape Architect**
  3. Wet, moldy, or otherwise damaged seed will not be accepted.
- D Fertilizer: **Refer to Soil Treatment (See Section 02916).**
- E **Wood Cellulose Fiber Mulch:** Wood cellulose fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall consist of specially prepared wood cellulose fiber. It shall be processed in such a manner that it will not contain germination or growth inhibiting factors. The wood cellulose fibers shall have the property of becoming evenly dispersed and suspended when agitated in water. When sprayed uniformly on the surface of the soil, the fibers shall form a blotter-like groundcover which readily absorbs water and allows infiltration to the underlying soil. Weight specifications from suppliers for all applications shall refer only to air dry weight of the fiber, a standard equivalent to 19 percent moisture. The mulch material shall be supplied in packages having a gross weight not in excess of 100 pounds and be marked by the manufacturer to show the dry weight content. Suppliers shall be prepared to certify that laboratory and field testing of their product has been accomplished and that it meets all of the foregoing requirements.
- F .
- G Weed control agent:  
**Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer**

to Soil Treatment (See Section 02916) for Soil Treatment. All weed control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 (SGTX) or approved equal.

### 3.1 EXECUTION

### 3.2 PREPARATION

- B Areas to receive seeding shall be loosened by manual or mechanical means to a depth of 1 1/2 inches, leveled and fine graded by hand raking. All stone (1" in diameter and larger in the top 2" of soil) are to be removed, tree stumps, brush, roots, vegetation, rubbish and other foreign matter shall be removed from the site. No foreign matter may be buried on the site. All tree stumps must be removed to a depth of two (2) feet below finish subgrade.
- C Level with Bank Sand or Topsoil, as approved by the **Landscape Architect/Owner's Representative.**
- D Loosen the subgrade by discing or by scarifying to a depth of at least 4—1 1/2 inches.
- E Place a layer of topsoil in accordance with requirements of Section 02910 – Topsoil.
- F .

### 3.3 APPLICATION

- Aa **Special Mulching Equipment and Procedures:** Hydraulic equipment used for the application of fertilizer, seed, and slurry of prepared wood fiber mulch shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing up to forty (40) pounds of fiber plus a combined total of seventy (70) pounds of fertilizer solids for each one hundred (100) gallons of water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which provide even distribution of the slurry on the slopes to be seeded. The slurry tank shall have a minimum capacity of eight hundred (800) gallons and shall be mounted on a traveling unit which may be either self-propelled or drawn with a separate unit which will place the slurry tank and spray nozzles within sufficient



proximity to the areas to be seeded so as to provide uniform distribution without waste. The Owner's Representative may authorize equipment with smaller tank capacity provided that the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat.

**Ab Mixing:**

1. Care shall be taken that the slurry preparation takes place on the site of the work. Spraying shall commence immediately after inspection when the tank is full.
2. Operators of hydromulching equipment shall be thoroughly experienced in this type of application. Apply specified slurry mix in a motion to form a uniform mat at specified rate. The operator shall spray the area with a uniform, visible coat by using the green color of the wood pulp as a guide. Keep hydromulch within areas designated and keep from contact with other plant material. Slurry mixture which has not been applied within four (4) hours of mixing shall not be used and shall be removed from the site.
3. After installation, the Contractor shall not operate any equipment over the covered area. Immediately after application, thoroughly wash off any plant material, planting areas, or paved areas not intended to receive slurry mix. Keep all paved and planting areas clean during maintenance operations.

**Ac Seeded Areas:** If, in the opinion of the Landscape Architect /Owner's Representative, unplanted skips and areas are noted after hydromulching, the Contractor shall be required to seed the planted areas with the grasses that were to have been planted at no additional cost to the Owner.

**A Seed:** Apply uniformly at following rates for type of seed and planting date:

TYPE	APPLICATION RATE	PLANTING DATE
UnHulled Common Bermuda Grass 98% Purity	2 lbs./1000 Square Feet 87 lbs/Acre	Spring/Summer Planting (April 15 to Sept 15)
UnHulled Common Bermuda Grass 98% Purity	1.5 lbs./1000 Square Feet 65 lbs/Acre	Fall/Winter Planting (Sept 15 to April 15)
No Rye Grass Shall Be Applied		

**B** Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited; Refer to Soil Treatment (See Section 02916) for Soil Treatment. All fertilizer recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone: 1-512-636-3711 (SGTX) or approved equal.

- C Mulch: Apply uniformly at a rate of 50 pounds per 1000 square feet.
- D .
- E Weed control agent: **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Section 02916) for Soil Treatment. All weed control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.**
- F Suspend all operations under conditions of drought, excessive moisture, high winds, or extreme or prolonged cold. Obtain the **Landscape Architect /Owner's Representative's** approval before resuming operations.

### 3.3 MAINTENANCE

#### Aa Establishment of Hydroseeded Areas:

1. **Hydromulched areas shall be maintained in good condition throughout the installation process and throughout the maintenance period as specified in Exterior Landscape Maintenance (See Section 02940).**
  2. **After installation, hydroseeded areas shall be watered in an amount and as often as necessary to keep seed beds moistened to their full depth for a period of 2 weeks.**
  3. **After initial 2 weeks of watering, seeded areas shall be watered and maintained to insure a healthy, vigorous growth throughout the installation period and the landscape maintenance period. See Soil Treatment (See Section 02916) for Soil Treatment.**
  4. **Upon completion of work, clean areas within Contract limits, remove tools, supplies and equipment. Wash down curbs and pavement areas. Scrub curbs and walks as necessary to insure a clean surface. Provide site clean and free of materials and suitable for use as intended.**
- A Maintain grassed areas by watering, fertilizing, weeding, and trimming as required to establish and sustain **90%** acceptable vegetative cover **with no bare areas in excess of twelve (12") inches diameter.**

**END OF SUPPLEMENTAL**

**SECTION 02922 S****SODDING**

*The following supplement modifies specification Section 02922 – Sodding Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.*

**1.1 GENERAL****1.2 SECTION INCLUDES**

**B References to Technical Specifications:**

**7. Section 02916 – Soil Treatment**

**1.5 QUALITY ASSURANCE**

**A. Reference Standards and Governing Agencies: The following documents and agencies govern the work except where more restrictive requirements are specified.**

- 1. All local, municipal and state laws, and rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations and requirements of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, these specifications and drawings shall take precedence.**
- 2. The most recent edition published edition of the ANSI: American National Standards Institute, 260.1: Nursery Stock.**
- 3. Standardized Plant Names, 1942 Edition, American Joint Committee on Horticultural Nomenclature.**
- 4. Occupational and Safety Health Administration (OSHA): General Industry (29 CFR 1910), Construction Industry (29 CFR 1926), OSHA Pamphlet 3861, OSHA Publication 3752.**

**B. Field Supervision: Require Contractor to maintain an experienced full-time supervisor on Project site when work is in progress.**

**C. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.**

**D. Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.**

**E. All soil treatment and pest control recommendations will be specified and applied by**

Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.

**F. Inspections:**

1. Weekly meetings will be held through construction with the Landscape Architect, Owner's Representative and Contractor.
2. Surfaces indicated to be sodded shall be inspected to verify that all preparatory work in the area has been completed. Sodding shall not start until all preparatory work has been completed
3. Submit written requests for inspections to the Landscape Architect and Owner's Representative at least seven (7) days prior to anticipated inspection date.

**G. Contractor shall:**

1. The landscape contractor must have a minimum of 5 years' experience with chemical-free installations and maintenance. Job references for projects that have integrated Sustainable Growth Texas products shall substantiate this experience. Evidence of long term performance consisting of performance statement letters or personnel for contact shall be furnished upon request.

2.1 PRODUCTS

2.2 MATERIALS

**C Fertilizer: Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility. All soil treatment/fertilizer recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

**D Weed and Insect Treatment: Provide acceptable treatment to protect sod from weed and insect infestation. Submit treatment method to the Landscape Architect for approval. All insect and disease control shall be installed within guidelines set forth by the Structural Pest Control Board of the State of Texas. Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility. All weed and insect control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

2.3 SOD

**B Contents: 95 percent permanent grass suitable to climate in which it is to be placed; a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum thickness of 1 inch; not more than 5 percent weeds and undesirable grasses; good texture, free from obnoxious grasses, roots, stones and foreign materials.**

- C Size: 12 inch wide strips, uniform in thickness (2 inch minimum with clean-cut edges). **Sod shall have been mowed within seven (7) days of being stripped/cutting.**
- D Sod is to be supplied and maintained in a healthy condition as evidenced by the grass being a normal, green color. **Dry sod will be rejected.**

### 3.1 EXECUTION

### 3.2 PREPARATION

- A Do not start work until conditions are satisfactory. Do not start work during inclement or impending inclement weather. Perform Sodding only when weather and soil conditions are deemed by **Landscape Architect** to be suitable for proper placement.
- B **Strip existing vegetation and one (1) inch of existing soil from all areas to receive sod not stripped and graded under previous work.** After the areas to receive sod are brought to grade, rake out any foreign organic or inorganic material, including stones, hard clay lumps and other debris.
- D Loosen the subgrade by discing or by scarifying to a depth of at least 1 ½ inches.
- E Place and compact topsoil in accordance with requirements of Section 02910 – Topsoil. Top soil shall be free of weeds and foreign material immediately before sodding. **Finish grade to be one (1) inch below top of adjacent hardscape.**
- F .
- H **Immediately prior to placing sod, refer to Soil Treatment (See Specification 02916).**

### 3.3 APPLICATION

- C Tamp and roll sod with approved equipment to eliminate minor irregularities and to form close contact with soil bed immediately after planting and watering. Submit type of tamping and rolling equipment to be used to the **Landscape Architect** for approval, prior to construction.
- D **Apply second application of fertilizer sixty (60) days after planting refer to Soil Treatment (See Specification 02916).**

### 3.3 MAINTENANCE

#### A Maintenance Period:

1. Begin maintenance immediately after each section of grass sod is installed and continue for a 30-day period from date of Substantial Completion. **Maintain as specified in Exterior Landscape Maintenance (See Section 02940).**
3. Water, fertilize, control disease and insect pests, mow, edge, replace unacceptable materials, and perform other procedures consistent with good horticultural practice to ensure normal, vigorous and healthy growth. All disease control shall be installed within guidelines set forth by the Structural Pest Control Board of the State of Texas. **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited. Refer to Soil Treatment (See Specification 02916).**
4. Notify **Landscape Architect** 10 days before end of maintenance period for inspection.

#### D Fertilizer and Pest Control:

1. **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility. All soil treatment and pest control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.**
2. Treat areas of heavy weed and insect infestation as recommended by treatment manufacturer. **All soil treatment and pest control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

**END OF SUPPLEMENTAL**

**LANDSCAPE AND TREE PLANTING**

*The following supplement modifies specification Section 02931 – Landscape and Tree Planting Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.*

## 1.1 GENERAL

## 1.2 SECTION INCLUDES

**A Furnish and install complete and in place all landscape materials including all plant materials, topsoil, compost, plant bed mix, mulch, edging, tree stakes and accessories as shown on the plans, plans schedules, notes, details and as needed to install all items on the plan and as specified herein. Rough and finish grading is part of the landscape work.**

**Aa Contractor is responsible for coordinating all planting and planting related work with other trades and aspects of work as necessary to satisfactorily complete the requirements of this specification.**

**Ab Contractor is responsible for completion of the according to the standards outlined in Exterior Landscape Maintenance (See Section 02940). Measurement and Payment is under ‘Plants’ of the specified size and variety.**

**Ac Contractor is responsible for maintenance of vegetation within the construction zone until final acceptance.**

## 1.3 MEASUREMENT AND PAYMENT

**A Measurement for Landscape Planting items is as specified in the bid form.**

**B Payment for Landscape Planting items shall include all labor, materials, equipment, and preparation necessary for installation and maintenance, including Soil Treatment as found in Specification 02916.**

## 1.4 SUBMITTALS

**B Submit samples of the plants and grasses to be used for approval prior to installation. Inspection will be done on the project site. If these samples prove unacceptable, Contractor will take Landscape Architect to source to specifically tag the material**

for the project. All tagged material to be brought to site with tags in place as attached in field.

#### 1.6 DELIVERY AND STORAGE OF MATERIALS

- B The Contractor shall be solely responsible for the safe transportation of plants to the site and their condition upon arrival. Trees damaged, dehydrated or abused during transit and storage **WILL BE REJECTED**.
- C Store plants on the site as directed. **Protect the balls and water regularly until planting. If trees are left in storage over the weekend or holiday provide a means of periodically watering and inspecting root ball protection.**
- D .
- J **The Landscape Architect and/or Owner's Representative may inspect any phase of this operation and may reject any plant material improperly handled during any phase of this operation.**

#### 1.9 WARRANTY

- B Replace plants that fail during the warranty **within 60 days of notification by Landscape Architect and/or Owner's Representative.**
- C **Contractor is responsible to** periodically inspect plants for proper watering, during warranty period.
- H Remove and replace trees found to be dead during warranty period. Remove and replace trees which are in doubtful condition **within 60 days of notification**, or if approved by the **Landscape Architect**, extend warranty period for such trees for a full growing season.

#### 1.10 SOIL ANALYSIS

- A Submit for approval an analysis of all soils obtained from off-site sources prior to delivery. **No off-site soils will be accepted on site without written approval of Landscape Architect.**

#### 1.11a PROTECTION OF EXISTING PLANTS TO REMAIN

- A **Do not store materials or equipment, permit burning, or operate or park equipment or vehicles under the branches of any existing plant to remain except as actually required for construction in those areas.**
- B **Provide barricades, fences, staked ribbon markings, or other barriers as necessary at the drip line to protect existing plants to remain from damage during construction.**



- C Notify Landscape Architect and/or Owner's Representative in any case where Contractor feels grading or other construction called for by Contract Documents may damage existing plants to remain.
- D If existing plants to remain are damaged during construction, Contractor shall replace such plants of the same species and size as those damaged at no cost to Owner. Determination of extent of damage and value of damaged plant shall rest solely with Landscape Architect and/or Owner's Representative. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility in handling repairs.

#### 1.14 QUALITY ASSURANCE

- A Landscaper shall be a firm specializing in landscape and planting work. **The landscape contractor must have a minimum of 6 years' experience with chemical-free installations and maintenance. Job references for projects that have integrated Sustainable Growth Texas products shall substantiate this experience. Evidence of long term performance consisting of performance statement letters or personnel for contact shall be furnished upon request.**
- B Do not make substitutions of approved trees unless approved in writing by the Engineer. If specified planting material is not obtainable, submit proof of non-availability together with proposal for use of equivalent material. Substitutions of larger size or better grade than specified will be allowed, but with no increase in unit price.
- C **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility. All soil treatment and pest control recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

#### 1.15 MAINTENANCE BY THE CONTRACTOR: Refer to Exterior Landscape Maintenance (See Specification 02940)

#### 2.1 PRODUCTS

#### 2.2 TOPSOIL

- B **Fertilizer: All fertilizer recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

2.2 SOIL TREATMENT FERTILIZER

- A Use of Synthetic Fertilizer is prohibited. None permitted without written approval from Landscape Architect and Owner's Representative. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.
- B. **All fertilizer recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal.**

2.3 ADDITIVES (NOT APPLICABLE)

2.3 MULCH

- A **Contractor shall use Native Hardwood Mulch. Native Hardwood Mulch shall be the product of standard shredding of native deciduous trees (primarily hardwoods) and brush with only a small amount of bark.**
- B **The Mulch shall be installed to a depth of two (2") throughout the planted bed areas. The mulch shall be free of debris, large sticks, leaves of deciduous trees and other foreign material as manufactured and blended by Nature's Way Resources, 101 Sherbrook Circle, Conroe, TX 77385 Phone 1-936-321-6990 or approved equal.**

**2.4 CONSTRUCTION MATERIALS****A Root Ball Anchors:**

1. Contractor shall use "Root Anchor Safety stake" below grade rootball anchoring system as manufactured by Tree Stake Solutions, 9973 FM 521 Rd., Rosharon, TX 77583 Phone: 1-281-778-1400 or approved equal. Refer to details for staking and/or guy requirements. ([www.treestakesolutions.com](http://www.treestakesolutions.com))

**B Edging:**

1. The Composite Edging shall be High Density Polyethylene made from 100% recycled content feed stock. The color shall be Redwood as provided by the manufacturer.
2. The Composite Edging shall be 1" x 6" x 20' in size for each piece. Stakes shall be of a type specified by the manufacturer and placed per manufacture instructions.
3. Contractor shall use Benda-Board Composite Bed Edging as manufactured by Epic Plastics, 104 East Turner Road, Lodi, CA 95240 Phone: 209-333-6161 or approved equal. ([www.epicplastics.com](http://www.epicplastics.com))

**2.5 SPRAYS (NOT APPLICABLE)**

**2.5 a SOIL TREATMENT PRE-EMERGENCE WEED CONTROL, HERBICIDES**

- A **Use of Herbicides is prohibited.** None permitted without written approval from Landscape Architect and Owner's Representative. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.
- B All herbicide recommendations will be specified and applied Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal.

**2.5 b SOIL TREATMENT INSECTICIDES**

- A **Use of Insecticides is prohibited.** None permitted without written approval from Landscape Architect and Owner's Representative. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.
- B All insecticide recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal.

**2.05c SOIL AMENDMENT**

- A This item is incorporated as part of the installation of hydroseed application with fine grading. This does not relieve the contractor from following the remainder of this specification document.
- B All soil amendments will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX.,77377 Phone:1-512-636-3711 (SGTX) or approved equal. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.

**2.06 PLANT CHARACTERISTICS**

- B Select well-formed plants balanced between height and spread typical of the species or variety with branches in normal position. Heading back plants to meet size limits will not be permitted. **Plants to conform to the heights and spreads as shown on plans.**
- C Unless otherwise specified, all plants will be nursery grown and at least twice transplanted. Use plants which have been growing under similar climatic conditions to those of the project for at least 2 years prior to the date of the contract. **Container stock, when specified, shall have grown in the containers in which delivered for at least 6 months, but not over two years. Samples must prove no root-bound conditions exist.** Recently stepped-up plants will not be acceptable. **No B&B or bare root plants will be accepted.**
- D
- Growing Practices for all trees:**
1. **Shaved Root ball: Root ball shaved at every container transfer to mitigate circling roots.**
  2. **Visible and ungirdled root flare: Root flare at or above ground level with no girdling roots.**
  3. **Central leader without co-dominates: Trees are trimmed to a straight central leader and co-dominates removed.**
- F Regardless of sample selection, a plant may be rejected at the site by the **Landscape Architect.**

## 2.7 NURSERY STOCK

- A Deciduous Trees. Provide trees which are straight and symmetrical and have a persistently preferred main leader. The crown must be in good overall proportion to the entire height of the tree. Where **multi-trunk** is specified, a plant having a minimum of three stems originating from a common base at the ground line will be furnish.

## 2.8 FIELD COLLECTED PLANTS (NOT APPLICABLE)

## CITY OF PEARLAND –

SUPPLEMENTAL SPECIFICATIONLANDSCAPE AND TREE PLANTING

Project No. PK 1402

## 2.9 SEED

- B Bermuda. Provide common Bermuda seed. Deliver in original, unopened container showing weight, analysis, name of vendor and germination test results. Wet, moldy, or otherwise damaged seed will not be accepted.

1. **Certification of grass seed shall be:**

- a. **Certified Bermuda Seed, 98% pure Bermuda seed minimum requirement.**
- b. **Approved by Landscape Architect**

## 2.11 GRASS

- A Obtain certified sod from an approved source.

1. **Sod Certification: Certification shall be submitted from the sod nursery as to the grass species, land requirement of a maximum five (5) varieties of the same species per acre, location of the field from which the sod has been stripped/cut and the date of stripping/cutting. Certification shall accompany the delivery of the sod. No Fungicides to be allowed.**
2. **Use of Synthetic Fertilizer, Insecticides and Herbicides are strictly prohibited: Refer to Soil Treatment (See Specification 09160) for Organic Soil Fertility.**

- B Provide material which is true to type and name, and is typical of the species or variety.

- C Delivery:

6. Sods must be harvested within 12 hours of planting and arrive at the project site in a moist condition. **Dry sod will be rejected.**

- D Products:

3. Uniform mowed height at time of harvesting material: 1-1/2 inches. **Sod shall have been mowed within seven (7) days of being stripped/cutting**
7. **Sod shall be nursery grown Common Bermuda sod unless otherwise specified in writing by the Landscape Architect having a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum thickness of 1 inch. Sod shall be free of noxious weeds and undesirable native grasses. Soil attached to the sod shall be free of stones and debris.**

## 2.12 TREES

- A Provide container grown trees which are straight and symmetrical and have a persistently preferred main leader. The crown shall be in good overall proportion to the entire height of tree with branching configuration as recommended by ANSI Z60.1 for type and species specified. Where **multi-trunk** is specified, a plant having a minimum of three stems originating from a common base at the ground line shall be furnished.

## 2.13 WATER

- B **Irrigation must be complete and operationally approved by Landscape Architect and/or Owner's Representative prior to planting.**
- C For watering of areas not covered by the irrigation system:
  - 1. Contractor shall utilize a water truck or hydromulch machine to apply water by hand watering means.
- D For watering of areas covered by the irrigation system prior to the irrigation system being operational:
  - 1. Contractor shall utilize a water truck or hydromulch machine to apply water by hand watering means.

## 2.14 SOURCE QUALITY CONTROL

- A Notify **Landscape Architect**, prior to installation, of location where trees that have been selected for planting may be inspected. Plant material will be inspected for compliance with following requirements.
  - 1. Genus, species, variety, size and quality.
  - 2. Size and condition of balls and root systems, insects, injuries and latent defects.
- B **Plant material must be approved prior to installation. Submit written requests for inspections to the Landscape Architect and Owner's Representative at least seven (7) days prior to anticipated inspection date.**
- C **Plants identified as "selected specimen" shall be approved and tagged at place of growth by Landscape Architect and/or Owner's Representative. For distant material, submit 4" x 6" photographs for pre-inspection review. Photographs shall show at least two individual plants and overall views of the nursery. Included with the photos shall be the name and location of the nursery source, and the total quantity of plants available to select from.**
- D **Contractor shall provide proof of all plant material availability six (6) months prior to the start of demolition and clearing of the project. Proof shall be tagged planted material for this project. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract Price. Such proof shall be substantiated and submitted in writing to Landscape Architect and Owner's Representative at least six (6) months prior to the start of demolition and clearing of the project. These provisions shall not relieve Contractor of the responsibility of obtaining specified materials in advance if special growing conditions or other arrangements must be made in order to supply specified materials.**

## 2.16 PLANTING PROCEDURES

- A Temporary Nursery. A temporary nursery may be used to store plants, but no more than 5 days before planting. Keep plants well watered and protected.
1. **No B&B plants will be accepted.**
  2. **No bare root plants will be accepted.**

### 3.1 EXECUTION

### 3.2 SITE PREPARATION

- B Layout **plants** at locations shown on Drawings. **Use wire stakes (flags) color-coded for each species of plant material. Stake location of each tree and major shrub and outline of shrub and groundcover beds.** In case of conflicts, notify **Landscape Architect** before proceeding with Work. **Landscape Architect and/or Owner's Representative will check location of plants in the field and shall adjust to exact position before planting begins.**
- F In Situ Soil Preparation:
1. **Sustainable Growth of Texas will recommend and apply all fertilizers and soil additives.**



## G Fertilizer.

1. Use of Synthetic Fertilizer is prohibited. None permitted without written approval from Landscape Architect and Owner's Representative. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.
2. All fertilizer recommendations will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX., 77377 Phone:1-512-636-3711 (SGTX) or approved equal.

**3.1 PLANT BED PREPARATION**

- A Plant Bed Preparation shall incorporate furnishing and installing complete and in place all materials necessary for planter bed creation unless otherwise specified differently on the Bid form.
- B Plant Bed Preparation shall incorporate furnishing and installing complete and in place Independence Park Planting soil mix which will be required for all planted areas and shall be used in all areas of plant pit and plant bed excavation and preparation. Independence Park Planting Soil Mix shall be as manufactured and blended by Nature's Way Resources, 101 Sherbrook Circle, Conroe, TX 77385 Phone: 1-936-321-6990 or approved equal.

**3.03 PREPARATION OF PLANTING SOIL**

Mix Independence Park Planting Mix (50%) with existing site soils (50%) by mechanical means.

1. Soil and amendment bases shall be completely pulverized and free of lumps or aggregated material. Moisture content of base materials shall not be such that chemical granular or pelletized additives become dissolved before thorough mixing.
2. Mix media in quantities of not less than 50 cubic yards or mix total quantity required if less than 100 cubic yards. The Contractor shall be responsible for continuity between batches.
3. Deliver to the site planting media prepared off-site.
4. Mix vermiculite, perlite and SGTX hi-carbon mix or approved equal on site with prepared planting media; as directed by Sustainable Growth of Texas. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.

All soil amendments will be specified and applied by Sustainable Growth of Texas 16000 FM 2920, Tomball, TX 77377 Phone: 1-512-636-3711 (SGTX) or approved equal. Refer to Soil Treatment (See Specification 02916) for Organic Soil Fertility.

### 3.4 QUANTITIES

- A The Contractor shall keep in storage, at his/her own expense, sufficient quantities of mix to repair any settling or to adjust grades throughout the warranty period.

### 3.5 PLANTING

- B When conditions detrimental to plant growth are encountered, such as unsatisfactory soil, obstructions, or adverse drainage conditions, notify the **Landscape Architect** of such conditions before planting. **Subsoil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that clods will not break readily. Water shall be applied, if necessary, to bring soil to an optimum moisture content for tilling and planting.**

### 3.6 PLANTING GRASS

- B To prevent excessive weed growth in the grass areas, the Contractor should be prepared to immediately install the grass seed upon the completed and acceptable finished grade.

- C Seed:

1. **Materials Inspection:** The day of hydromulching, Landscape Contractor shall provide hydromulch machine, water, labor, unopened seed container in original manufacturers container and fiber material. SGTX personnel shall provide hydro-slurry mix. The Landscape Architect shall inspect and observe the seed mix in the original container(s) and SGTX hydro-slurry mix prior to pouring into tank and application. The inspection and tank materials must meet the requirements for material outlined in Soil Treatment (See Specification 09160). Any application of material without this inspection will result in a failed materials test, no measurement or payment will be applied for applied material and reapplication will be required. Contractor must submit written requests for inspections to the Landscape Architect and/or Owner's Representative at least seven (7) days prior to anticipated inspection date.
2. Evenly broadcast seed specified in 2.09 at the following rates:

Project No. PK 1402

- a. Bermuda: 1 pound per 1000 square feet
- b. Rye: 6 pounds per 1,000 square feet
- 3. Lightly but thoroughly sprinkle the entire seeded area with water.
- 4. **Refer to Section 02921 Hydromulch Seeding**

**D Sod:**

- 1. Use Bermuda, Buffalo, or St. Augustine sod in accordance with 2.11A.
- 2. Prepare soil in accordance with 3.03.
- 3. Lay sod in a running bond pattern. Pieces should be consistently cut with joints tightly butted together. Water the in-place sod liberally and roll it in two direction with a heavy roller. Areas not level due to fluctuations in the sod depth should be covered and leveled with a 50/50 mix of sharp sand and topsoil. Fertilize **as directed by Sustainable Growth of Texas.**
- 4. **Refer to Section 02922 Sodding.**

- E **After completion of fine grading and top-soiling operations, do not drive trucks or other heavy equipment over finished areas. If compaction occurs before planting, the soil shall be aerated before planting.**

**3.7 FIELD QUALITY CONTROL**

- A The **Landscape Architect** may reject unsatisfactory or defective material at any time during progress of Work. Contractor shall remove rejected trees immediately from site and replace with specified materials. Plant material not installed in accordance with these Specifications will be rejected.
- B An inspection to determine final acceptance will be conducted by the Landscape Architect.

**3.8 CLEANING AND MAINTENANCE**

- A Contractor shall maintain **vegetation within the construction zone according to the standards outlined in Exterior Landscape Maintenance (See Section 02940), until final acceptance.**

*CITY OF PEARLAND –*

*SUPPLEMENTAL SPECIFICATION*

**LANDSCAPE AND TREE PLANTING**

Project No. PK 1402

**3.09 PROTECTION OF THE WORK**

A Protect planting work and materials from damage due to planting operations. Maintain protection during **construction** period. Treat, repair, or replace damaged planting work as directed by the Engineer.

**END OF SUPPLEMENTAL**