



CITY OF HOUSTON

John Whitmire

Mayor



HOUSTON AIRPORT SYSTEM

George Bush Intercontinental ~ William P. Hobby ~ Ellington Airport

Mario C. Diaz
Director of Aviation

January 03, 2024

SUBJECT: Addendum No. 1

REFERENCE: Invitation To Bid (ITB) for Standifer Street and Lee Road Sink Hole Repair and Entrance at George Bush Intercontinental, Solicitation No. HOA-SINKREP-2024-009; Project No.219

To: All Prospective Bidders:

This Addendum is issued for the following reasons:

I. RESPOND TO QUESTIONS.

1. **Question:** It seems spec sections 00456, 00459, 00801, and 00810 are missing.

Response: Not required for this project; refer to attachment 00410A in the solicitation document.

2. **Question:** It seems spec sections 02321, 02911, and 02912 are missing.

Response: Please refer to the attachments below.

When issued, the Addendum shall automatically become part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Addendum. The addendum will be incorporated into the Agreement as applicable. The bidder(s) is responsible for ensuring that it has obtained all such letter(s). By submitting a bid on this project, bidder(s) shall be deemed to have received all Addenda and to have incorporated them into their bid.

If further clarification is needed regarding this solicitation, please contact Senior Procurement Specialist, Ola Alhammami via email at ola.alhammami@houstontx.gov.

DS
AO

DocuSigned by:
Cathy Vander Plaats

02232020DE09414...
Cathy Vander Plaats
Aviation Procurement Officer
Houston Airport System

CVP/oa

cc: Alfredo Oracion
Solicitation File

- Council Members: Amy Peck Tarsha Jackson Abbie Kamin Carolyn Evans-Shabazz Fred Flickinger Tiffany D. Thomas Mary Nan Huffman
 Mario Castillo Joaquin Martinez Edward Pollard Martha Castex-Tatum Julian Ramirez Willie Davis Twila Carter
 Letitia Plummer Sallie Alcorn
 Controller: Chris Hollins

SECTION 02321

CEMENT STABILIZED SAND

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cement stabilized sand.

1.02 RELATED SECTIONS

- A. Section 01270 – Measurement and Payment
- B. Section 01330 - Submittal Procedures
- C. Section 01454 – Testing Laboratory Services
- D. Section 02320 – Utility Backfill Materials

1.03 MEASUREMENT AND PAYMENT

- A. Unit Prices.

1. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring cement stabilized sand.
2. Refer to Paragraph 3.04 for material credit.
3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

- B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.04 REFERENCES

- A. ASTM C 33 - Standard Specification for Concrete Aggregates.
- B. ASTM C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
- C. ASTM C 42 - Standard Test Methods for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- D. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.
- E. ASTM C 123 - Standard Test Method for Lightweight Particles in Aggregate.

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- F. ASTM C 142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
- G. ASTM C 150 - Standard Specification for Portland Cement.
- H. ASTM D 558 - Standard Test Method for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures.
- I. ASTM D 1632 - Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory
- J. ASTM D 1633 - Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
- K. ASTM D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- L. ASTM D 3665 - Standard Practice for Random Sampling of Construction Materials.
- M. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- N. ASTM D 6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.05 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. Submit proposed target cement content and production data for sand-cement mixture in accordance with requirements of Paragraph 2.03, Materials Qualifications.

1.06 DESIGN REQUIREMENTS

- A. Use sand-cement mixture producing minimum unconfined compressive strength of 100 pounds per square inch (psi) in 48 hours.
 - 1. Design will be based on strength specimens molded in accordance with ASTM D 558 at moisture content within 3 percent of optimum and within 4 hours of batching.
 - 2. Determine minimum cement content from production data and statistical history. Provide no less than 1.1 sacks of cement per ton of dry sand.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cement: Type I Portland cement conforming to ASTM C 150.

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- B. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C 33, or requirements for bank run sand of Section 02320 - Utility Backfill Materials, and the following requirements:
1. Classified as SW, SP, SW-SM, SP-SM, or SM by Unified Soil Classification System of ASTM D 2487.
 2. Deleterious materials:
 - a. Clay lumps, ASTM C 142 - less than 0.5 percent.
 - b. Lightweight pieces, ASTM C 123; less than 5.0 percent.
 - c. Organic impurities, ASTM C 40, color no darker than standard color.
 3. Plasticity index of 4 or less when tested in accordance with ASTM D 4318.
- C. Water: Potable water, free of oils, acids, alkalies, organic matter or other deleterious substances, meeting requirements of ASTM C 94.

2.02 MIXING MATERIALS

- A. Add required amount of water and mix thoroughly in pugmill-type mixer.
- B. Stamp batch ticket at plant with time of loading. Reject material not placed and compacted within 4 hours after mixing.

2.03 MATERIAL QUALIFICATION

- A. Determine target cement content of material as follows:
1. Obtain samples of sand-cement mixtures at production facility representing range of cement content consisting of at least three points.
 2. Complete molding of samples within 4 hours after addition of water.
 3. Perform strength tests (average of two specimens) at 48 hours and 7 days.
 4. Perform cement content tests on each sample.
 5. Perform moisture content tests on each sample.
 6. Plot average 48-hour strength vs. cement content.
 7. Record scale calibration date, sample date, sample time, molding time, cement feed dial settings, and silo pressure (if applicable).
- B. Test raw sand for following properties at point of entry into pug-mill:
1. Gradation

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2. Plasticity index
 3. Organic impurities
 4. Clay lumps and friable particles
 5. Lightweight pieces
 6. Moisture content
 7. Classification
- C. Present data obtained in format similar to that provided in sample data form attached to this Section.
- D. The target content may be adjusted when statistical history so indicates. For determination of minimum product performance use formula:

$$f_c \% \frac{1}{2} \text{ standard deviation}$$

PART 3 EXECUTION

3.01 PLACING

- A. Place sand-cement mixture in maximum 12-inch-thick loose lifts and compact to 95 percent of maximum density as determined in accordance with ASTM D 558, unless otherwise specified. Refer to related specifications for thickness of lifts in other applications. Target moisture content during compaction is +3 percent of optimum. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water to mix at plant.
- B. Do not place or compact sand-cement mixture in standing or free water.
- C. Where potable water lines cross wastewater line, embed wastewater line with cement stabilized sand in accordance with Texas Administrative Code §290.44(e)(4)(B):
1. Provide minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume. Use at least 2.5 bags of cement per cubic yard of mixture (2 sacks per ton of dry sand).
 2. Unless otherwise shown on Drawings, embed wastewater main or lateral minimum of six inches above and below.
 3. Use brown coloring in cement stabilized sand for wastewater main or lateral bedding for identification of pressure rated wastewater mains during future construction.

3.02 FIELD QUALITY CONTROL

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- A. Testing will be performed under provisions of Section 01454 - Testing Laboratory Services.
- B. One sample of cement stabilized sand shall be obtained for each 150 tons of material placed per day with no less than one sample per day of production. Random samples of delivered cement stabilized sand shall be taken in the field at point of delivery in accordance with ASTM 3665. Obtain three individual samples of approximately 12 to 15 lb each from the first, middle, and last third of the truck and composite them into one sample for test purpose.
- C. Prepare and mold four specimens (for each sample obtained) in accordance with ASTM D 558, Method A, without adjusting moisture content. Samples will be molded at approximately same time material is being used, but no later than 4 hours after water is added to mix.
- D. After molding, specimens will be removed from molds and cured in accordance with ASTM D 1632.
- E. Specimens will be tested for compressive strength in accordance with ASTM D 1633, Method A. Two specimens will be tested at 48 hours plus or minus 2 hours and two specimens will be tested at 7 days plus or minus 4 hours.
- F. A strength test will be average of strengths of two specimens molded from same sample of material and tested at same age. Average daily strength will be average of strengths of all specimens molded during one day's production and tested at same age.
- G. Precision and Bias: Test results shall meet recommended guideline for precision in ASTM D 1633 Section 9.
- H. Reporting: Test reports shall contain, as a minimum, the following information:
 - 1. Supplier and plant number
 - 2. Time material was batched
 - 3. Time material was sampled
 - 4. Test age (exact hours)
 - 5. Average 48-hour strength
 - 6. Average 7-day strength
 - 7. Specification section number
 - 8. Indication of compliance / non-compliance
 - 9. Mixture identification
 - 10. Truck and ticket numbers

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11. The time of molding
12. Moisture content at time of molding
13. Required strength
14. Test method designations
15. Compressive strength data as required by ASTM D 1633
16. Supplier mixture identification
17. Specimen diameter and height, in.
18. Specimen cross-sectional area, sq. in.

3.03 ACCEPTANCE

- A. Strength level of material will be considered satisfactory if:
 1. The average 48-hour strength is greater than 100 psi with no individual strength test below 70 psi.
 2. All 7-day individual strength tests (average of two specimens) are greater than or equal to 100 psi.
- B. Material will be considered deficient when 7-day individual strength test (average of two specimens) is less than 100 psi but greater than 70 psi. See Paragraph 3.04 Adjustment for Deficient Strength.
- C. The material will be considered unacceptable and subject to removal and replacement at Contractor's expense when individual strength test (average of two specimens) has 7-day strength less than 70 psi.
- D. When moving average of three daily 48-hour averages falls below 100 psi, discontinue shipment to project until plant is capable of producing material, which exceeds 100 psi at 48 hours. Five 48-hour strength tests shall be made in this determination with no individual strength tests less than 100 psi.
- E. Testing laboratory shall notify Contractor, Project Manager, and material supplier by facsimile of tests indicating results falling below specified strength requirements within 24 hours.
- F. If any strength test of laboratory cured specimens falls below the specified strength, Contractor may, at Contractor's own expense, request test of cores drilled from the area in question in accordance with ASTM C42. In such cases, three (3) cores shall be taken for each strength test that falls below the values given in 3.03.A.

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- G. Cement stabilized sand in an area represented by core tests shall be considered satisfactory if the average of three (3) cores is equal to at least 100 psi and if no single core is less than 70 psi. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted.

3.04 ADJUSTMENT FOR DEFICIENT STRENGTH

- A. When mixture produces 7-day compressive strength greater than or equal to 100 psi, then material will be considered satisfactory and bid price will be paid in full.
- B. When mixture produces 7-day compressive strength less than 100 psi and greater than or equal to 70 psi, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$30.00 \times 2 (100 \text{ psi} - \text{Actual psi})}{100}$$

- C. When mixture produces 7-day compressive strength less than 70 pounds per square inch, then remove and replace cement-sand mixture and paving and other necessary work at no cost to City.

Supplier: City Stabilized Sand	Plant No: 1 - Main Street	Date of Tests: January 1, 1997
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Item	Raw Sand	1.1 Sack	100 psi	1.5 Sack	2.0 Sack
Moisture Content	10.9	15.7	14.0	13.8	13.7
Cement Feed Dial Setting	--	2.25	2.5	2.75	3.75
Silo Pressure (psi)	--	4	4	4	4
Batch Time	10:00	10:10	10:15	10:20	10:25
Sample Time	--	10:10	10:15	10:20	10:25
Molding Time	--	12:30	12:45	1:00	1:15
Cement Content (sacks/ton)	--	1.1	1.3	1.6	2.1
Compressive Strength at 48 hrs. (avg of 2)	--	80	120	160	220
Compressive Strength at 7 days (avg of 2)	--	135	200	265	365

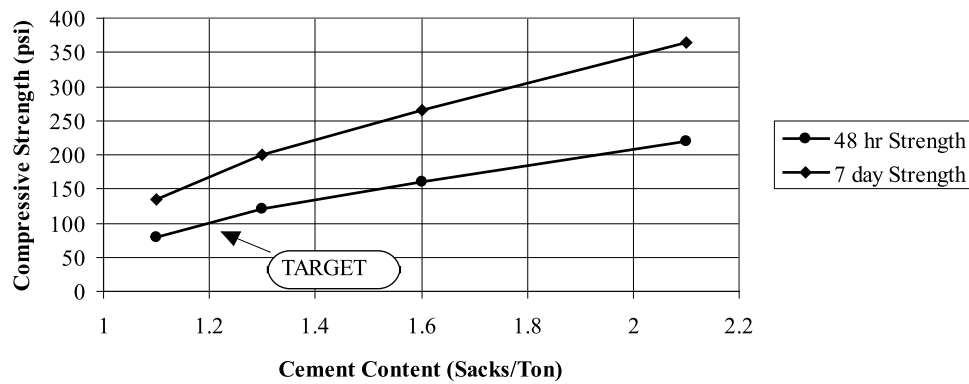
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Sieve size	Percent Passing	COH Spec. Section 02320
3/8 Inch	100	--
No. 16	100	--
No. 40	100	--
No. 50	99	--
No. 100	41	--
No. 200	11	0 to 15

Raw Sand Tests	Result	City of Houston
Plasticity Index	Non-Plastic	4 Maximum
Organic Impurities	Passing	No Darker Than
Clay Lumps & Friable Parts (%)	0.0	0.5 % Maximum
Lightweight Pieces (%)	0.0	5.0 % Maximum
Classification	SP-SM	SW, SP, SW-SM, SP-SM, SM

Compressive Strength vs Cement Content



END OF SECTION

SECTION 02911

TOPSOIL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing and placing topsoil for finish grading and for seeding, sodding, and planting.

1.02 RELATED SECTIONS

- A. Section 01270 – Measurement and Payment
- B. Section 01576 – Waste Material Disposal
- C. Section 02315 – Roadway Excavation
- D. Section 02320 – Utility Backfill Materials
- E. Section 02921 – Hydro Mulch Seeding
- F. Section 02922 – Sodding

1.03 MEASUREMENT AND PAYMENT

- A. Unit Prices.
 - 1. No separate payment will be made for topsoil under this Section. Include payment in Section 02921 - Hydro Mulch Seeding or Section 02922 - Sodding.
 - 2. Refer to Section 01270 - Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Topsoil shall be fertile, friable, natural sandy loam surface soil obtained from excavation or borrow operations having following characteristics:
 - 1. pH value of between 5.5 and 6.5
 - 2. Liquid limit: 50 or less

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3. Plasticity index: 20 or less
 4. Gradation: maximum of 10 percent passing No. 200 sieve
- B. Topsoil shall be reasonably free of subsoil, clay lumps, weeds, non-soil materials, and other litter or contamination. Topsoil shall not contain roots, stumps, and stones larger than 2 inches.
- C. Obtain topsoil from naturally well-drained areas where topsoil occurs at minimum depth of 4 inches and has similar characteristics to that found at placement site. Do not obtain topsoil from areas infected with growth of, or reproductive parts of nut grass or other noxious weeds.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Excavate topsoil for esplanades and areas to receive grass or landscaping from areas to be further excavated. Stockpile in area approved by Project Manager.
- B. Stockpile topsoil to depth not exceeding 8 feet. Cover to protect from erosion.

3.02 TOPSOIL EXCAVATION

- A. Conform to excavation and stockpiling requirements of Section 02315 - Roadway Excavation.

3.03 PLACEMENT

- A. Place no topsoil until subgrade has been approved. For areas to be seeded or sodded, scarify or plow existing material to minimum depth of 4 inches, or as indicated on Drawings. Remove vegetation and foreign inorganic material. Place 4 inches of topsoil on loosened material and roll lightly with appropriate lawn roller to consolidate topsoil.
- B. Increase depth of topsoil to 6 inches when placed over sand bedding and backfill materials specified in Section 02320 - Utility Backfill Material.
- C. For areas to receive shrubs or trees, excavate existing material and place topsoil to depth and dimensions shown on Drawings.
- D. Remove spilled topsoil from curbs, gutters, and, paved areas and dispose of excess topsoil in accordance with requirements of Section 01576 - Waste Material Disposal.
- E. Place topsoil to promote good drainage and compact with light roller. Water topsoil after placement until saturated for minimum depth 6 inches, fill in and recompact areas of settlement.

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3.04 PROTECTION

- A. Protect topsoil from wind and water erosion until planting is completed.

END OF SECTION

SECTION 02912

TREE, PLANT, AND HARDSCAPE PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tree root barriers; various depths and combinations may be required.
- B. Tree trunk protectors.
- C. Water barriers.
- D. Staking and guying materials.

1.02 RELATED SECTIONS

- A. Section 01270 - Measurement and Payment
- B. Section 01330 – Submittal Procedures

1.03 MEASUREMENT AND PAYMENT

- A. Unit Prices.
 - 1. Payment for root barrier shall be on a linear foot basis for height noted.
 - 2. Payment for tree trunk protector, water barriers and staking material shall be on a linear foot basis for height noted.
 - 3. Refer to Section 01270-Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum). When Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.04 REFERENCES

- A. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
- B. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
- C. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- D. ASTM D 2240 - Standard Test Method for Rubber Property—Durometer Hardness

1.05 DEFINITIONS

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- A. Tree root barrier: Mechanical barrier and root deflector to prevent tree roots from damaging hardscapes and landscapes.
- B. Tree trunk protector: Material to protect young tree trunks from rodents, string trimmers, and lawn mowers.
- C. Water barriers:
 - 1. Controls run-off, preventing hardscape damage.
 - 2. Prevents irrigation water from percolating under pavement.
 - 3. Water corral for planting areas preventing pavement damage and saves water.
 - 4. Prevents snow, ice, and saltwater run-off from polluting planting areas adjacent to roadways and parking areas.
 - 5. Liner to separate golf greens and turf.
 - 6. Bamboo control.

1.06 SUBMITTALS

- A. Product data: Manufacturers standard literature defining materials for use on this Project.
 - 1. Submit product data in accordance with Section 01330 – Submittal Procedures.
- B. Shop drawings:
 - 1. Indicate locations and extent for tree root barrier material.
 - 2. Indicate trees receiving tree trunk protectors.
 - 3. Indicate locations and extent of water barriers.
 - 4. Indicate trees and plants to be staked and guyed.
- C. Samples if required by Architect:
 - 1. Tree root barrier: One full length panel.
 - 2. Tree trunk protector: One unit.
 - 3. Water barrier: One lineal foot of material.
 - 4. Staking and guying: One lineal foot.

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- D. Quality control submittals; manufacturer's instructions: Complete installation instructions for each item specified; may be combined with product data.

1.07 QUALITY ASSURANCE

- A. Qualifications; manufacturer: Minimum 20 years experience in tree and plant protection and accessories.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Packing and shipping: Provide materials in original unopened containers with manufacturer's labels intact and legible.
- B. Acceptance at site:
 - 1. Damaged materials determined by visual inspection will not be accepted.
 - 2. Remove rejected materials from Project site immediately.
- C. Storage and protection: Store materials in dry area in manufacturer's protective packaging; in original containers with labels and instruction instructions intact.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Acceptable manufacturers:
 - 1. Products of manufacturers meeting indicated standards and specified material properties are acceptable for use, subject to approval of product list and samples.
- B. Basic Material Properties of Tree Root Barriers

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Material and Thickness		Homopolymer Polyethylene
Properties	ASTM Test Method	Value Homopolymer Polyethylene
Tensile Stress Yield	D638	3800
Elongation at Break %	D638	10%
Tensile Modulus	D638	155,000
Notched Izod Impact	D256	0.4 – 0.4
Flexural Modulus 73 PSI	D790	145,000
Hardness Shore	D2240	P66

2.02 MANUFACTURED UNITS

A. Tree root barriers:

1. Shall be produced 12” – 48” depth.
2. Material: 0.080-inch wall thickness, nominal, injection molded 50% post-consumer recycled polypropylene panels with UV inhibitors.
3. Panel Specifics:
 - a. 7/16-inch Wide integral molded 0.08-inch thickness double top edge with stiffening ribs; bottom edge attached to vertical root deflecting ribs.
 - b. Integral molded 0.080-inch thickness by 2-inch deep vertical root directing ribs spaced at 6.0-inch O.C.
 - c. Integral molded 0.080-inch thickness by 2-inch long by 3/8-inch wide horizontal anti-lift ground lock tabs; minimum three per panel.
4. Preassembled joiner system for panel connection to adjacent panel.
5. Refer to standard details for root barrier installation.

B. Tree trunk protectors:

1. Material: 0.060-inch thickness polyethylene with UV inhibitors, recyclable.
2. Size: 9-inch high by single length accommodating tree up to 4-inch dia.
3. Larger trees indicated for protection: Couple two or more sections together.

C. Water barriers:

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1. Product standard of quality: Water Barrier WB Series.
 2. Material: 0.030-inch 0.040-inch thickness High Density Polyethylene (HPDE).
 3. Sizes: 24-inch, 30-inch, and 36-inch wide by 300-foot rolls.
 4. Manufacturers standard sealing tape.
 5. Sealant: Silicone type recommended by water barrier manufacturer for certain applications; applications requiring sealant indicated in manufacturers product data.
- D. Staking and guying materials:
1. Material: Flat, woven polypropylene; 900 lb. break strength.
 2. Size: wide by manufacturers standard roll lengths.

2.03 ACCESSORIES

- A. Provide related materials for complete installation of specified materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of conditions:
1. Verify other work in other sections, in, at, and around landscaping work is complete to extent that no damage will occur to newly planted materials or, any possible construction related damage will be minimal and replacement plant material is readily available for planting at no additional cost.
 2. Obtain verification, in writing, from work required in other Sections directly involving work in this Section regarding correct grades have been provided, coordination of topsoil spreading, and lawns and grasses planting.
 3. The contractor shall fulfill the responsibilities below prior to beginning work. Failure to do so will require removal or replanting work in this section.
 - a. Provide written notification to Architect of unacceptable conditions.
 - b. Receive verification of written notice.

3.02 PREPARATION

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**TREE, PLANT, AND
HARDSCAPE PROTECTION**

- A. Surface protection: Use methods necessary to prevent damage to completed site work performed in other Sections. Protect access to and areas around planted materials. Restore damaged areas to original compaction, grades, and lines; repair damaged grassed areas.

3.03 INSTALLATION

- A. Tree root barriers: Install in accord with manufacturers reviewed installation instructions where indicated on reviewed shop drawings with vertical root directing ribs facing inwards towards trees or plants; connect panels together as required.
- B. Tree trunk protectors:
1. Install in accord with manufacturers reviewed installation instructions where indicated on reviewed shop drawings.
 2. Join two or more segments together for trees over 4-inch dia.
- C. Water barriers:
1. Install where indicated on reviewed shop drawings in accord with manufacturers reviewed installation instructions using material widths required for conditions encountered.
 2. Seal to hardscape surfaces with specified sealant.
 3. Join material lengths with manufacturers sealing tape.
- D. Staking and guying materials:
1. Immediately after planting, guy and stake designated trees and large plants.
 2. Include tightening of guying materials to bring trees and plants to upright position.

END OF SECTION